DEH MORASI GHUNDAI: A CHALCOLITHIC SITE IN SOUTH-CENTRAL AFGHANISTAN

LOUIS DUPREE

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PREFACE

ALTHOUGH I COMPLETED the present monograph early in 1958, factors beyond my control have delayed its publication. In the interval, several recent publications, which have been added to the bibliography, are commented on in footnotes. The manuscript, however, remains substantially unaltered. Also, I have not attempted to compare the results of excavations at Deh Morasi Ghundai with the material from the Zhob Valley and that from Seistan, which were described by Fairservis in 1959 and 1961, respectively. The reports on those surveys were not available at the time of my writing this report. Such comparative chores I leave to my colleague, Dr. Walter A. Fairservis, Jr., who plans a definitive monograph on the prehistory of Kandahar Province. The present monograph is concerned with a test excavation at the first definitely identified prehistoric mound in Afghanistan, Deh Morasi Ghundai.

Many individuals contributed to the success of the Second Afghan Expedition of the American Museum of Natural History and to this monograph. Initially, my thanks go to all those at the Museum who made the expedition possible: the Trustees; the former Director, Dr. Albert E. Parr, Dr. Harry L. Shapiro, Chairman of the Department of Anthropology; and Dr. Walter A. Fairservis, Jr., director of the expedition in the field.

In Afghanistan, too, I received invaluable assistance from the many individuals who are listed below:

Afghan Government officials in Kabul: His Excellency Dr. Abdul Majid Khan, Minister of Education; His Excellency Gholam Mohammed Khan, Minister of Communications; His Excellency Dr. Yusuf Khan, Deputy Minister of Education; Dr. Ahmad Ali Kohzad, Director of the Kabul Museum; Mr. Mohammed Nabi Kohzad, editor of *Afghanistan;* Dr. Sultan Popol Khan and Mr. Myles Walsh, geologists in the Ministry of Mines; Mr. Mohammed Ibrahim, the archeologist who represented the Government of Afghanistan and accompanied us, contributing, through his cooperation and friendliness, to the success of our excavations.

American Embassy in Kabul: Ambassador and Mrs. Lewis Dreyfus and First Secretary Frederick Jandrey were cordial and very helpful in promoting good relations with highly placed Afghan officials. Other members of the Embassy staff, too numerous to mention, made our stay in Kabul pleasant.

French Archaeological Mission in Afghanistan: Dr. and Mme. Daniel Schlumberger and their staff welcomed us and not only permitted us access to their well-stocked library, but aided in negotiations with the Afghan Government.

Afghan Officials in Kandahar Province: Both His Excellency Mohammed Unas Khan, Governor of Kandahar Province, and His Excellency Asadullah Khan, Governor of the Sub-Province of Panjwai, contributed materially to the success of the excavation. The local residents of Deh Morasi, especially our workmen, merit special gratitude, for, on the whole, they proved understanding and cooperative to the *haraji* (foreigners) who dropped into their midst.

All the personnel of Morrison-Knudsen Afghanistan Company, Inc., made us feel at home in the company's construction camps, which in 1950–1951 offered us periodic journeys to a piece of the United States transplanted to Afghanistan. A few, among many who helped us, should have special mention: Messrs. M. A. Holwig (project engineer) and Ivan Rummel, both of whom actually worked at the site; Mr. John Ralston, who analyzed soil samples; Dr. and Mrs. John Colbert, and Messrs. Sidney Thornton, Russell Bennett, Frank Youngs, James Cardwell, and the late Frank Shepherd, who assisted us personally and professionally. To all we are extremely grateful.

At the Pennsylvania State University, I received support from many sources. Dean Ben Euwema of the College of Liberal Arts, Prof. Frederick R. Matson (also Director, Social Science Research Center), and Prof. William G. Mather, Chairman of the Department of Sociology and Anthropology, all encouraged my efforts. They curtailed my teaching load to give me time to complete the manuscript. For this enlightened assistance, I am most grateful. Professor Matson also contributed an important appendix on the technical aspects of the pottery. The Social Science Research Center at the Pennsylvania State University provided

funds for the typing of the manuscript and the photographic prints used for the plates.

Many individuals gave technical advice: Dr. Oliver L. Austin, Jr., Florida State University (modern fauna); Dr. Earle Caley, the Ohio State University (metal analyses); Prof. K. A. Chowdhury, Muslim University, Aligarh, India (botany); Mr. George G. Goodwin, the American Museum of Natural History (bone identifications); Dr. L. H. Lattman, the Pennsylvania State University (geology); Dr. William Spackman, the Pennsylvania State University (micropaleontology); Dr. J. R. Swallen, Smithsonian Institution (botany); Dr. Charles P. Thornton, the Pennsylvania State University (geology); Dr. H. A. Wahl, the Pennsylvania State University (botany); and Dr. John Zeigler, Woods Hole Oceanographic Institution (geology).

I wish to thank the Institute of Geographical Exploration of Cambridge, Massachusetts, for lending me surveying equipment.

My wife, Annie, contributed time, energy, and encouragement in the field, the home, and the laboratory. How can one adequately acknowledge such support?

Without the fine line drawings of Mr. Nicholas Amorosi of the American Museum, the reader would have been subjected to thousands of additional words.

No amount of thanks can ever express my true appreciation to Miss Bella Weitzner, the editor of this manuscript.

LOUIS DUPREE

Kabul, Afghanistan
March, 1962

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INTRODUCTION

THIS MONOGRAPH REPORTS on the excavations at Deh Morasi Ghundai, a mound situated about 16 to 17 miles southwest of Kandahar, Afghanistan, and about 4 miles east-southeast of Panjwai (Fig. 1). The mound is 140 meters in length and 80 meters in maximum width. Deh Morasi Ghundai was discovered in late December, 1950, by three members of the Second Afghan Expedition [Rose Lilien (Mrs. Ralph Solecki), Howard W. Stoudt, Jr., and George MacLellan] while on a survey. On January 2 to 3, 1951, three small test pits (Cuts 1, 2, 3) were sunk into the mound (Fig. 2). Although these cuts proved stratigraphically inconclusive, they did conclusively indicate cultural affinities with the earlier Quetta Valley excavations of the Second Afghan Expedition.[1] I suggested that we excavate a more extensive test trench from the top of Deh Morasi to virgin soil. Walter Fairservis, expedition leader, concurred, so, while his group undertook an archeological survey of Seistan, I excavated Cut 4 (Fig. 2). As a result, we uncovered the first stratified, prehistoric cultural sequence in Afghanistan.

GEOGRAPHY OF THE DEH MORASI REGION[2]

Deh Morasi Ghundai is situated on the edge of the great desert region of southwest Afghanistan (Pl. 13a). The Dori River, which flows into the Arghandab River west of Panjwai, is roughly the boundary between the limestone foothills of Kandahar Province and the Registan desert zone. The Registan sandy desert is a part of the extensive desert and semi-desert areas that stretch from the Thar (or Sind) Desert of India and West Pakistan through southwest Afghanistan into Iran. Registan itself is a region of shifting sand dunes with underlying basaltic pebbles. The height of these dunes ranges from 50 to 100 feet. In central Registan, the dunes are more fixed; interspersed between them are areas of sandy clay that become very sticky after the sporadic spring-summer rains. These scattered zones, called *pat* by the Baluchi, make cross-country travel difficult. Though barren and lifeless today, Registan once supported many Sassanian and Early Islamic settlements.[3]

North and northwest of Registan lie the Dasht-i-Margo and the Dasht-i-Khash (*dasht* in Persian means desert). Both of these deserts are hot, waterless, barren, pebble-strewn areas broken by occasional patches of volcanic ash a few inches thick.

The predominantly sandy deserts of Registan are separated from the stony wastes of the north by the Helmand River, creating a narrow (a few miles in width), fertile, intensively cultivated strip between the barren zones.

Deh Morasi [the village nearest Deh Morasi Ghundai (*ghundai* in Pushto means mound)] and neighboring villages are situated in a relatively well-watered, wedge-shaped tongue of land between the Tarnak River to the east, the Arghandab River to the west (Pl. 13b), and the Dori River to the south. A bare, waterless plain stretches north of the Arghandab River to the limestone ranges of the Hazarajat region of the Hindu Kush. The land surrounding Deh Morasi is made more fertile by a series of open canals and ditches leading from the rivers to the fields, and by underground tunnel canals (*qanats*, Persian; *kharez*, Pushto) which carry water from the foothills to the villages and streams.

Farther north and northeast, the great Hindu Kush, which dominate the geographic scene, effectively limit north-south movement through central Afghanistan. This is rugged country, inhabited by the physically Mongoloid Hazara and Chehar Aimak tribes.

CLIMATE[4]

Winter (December to February) is generally cold in Kandahar Province. Freezing temperatures are common at night; day temperatures are usually well above freezing by noon. Maximum day temperatures above 70° F. in December and January and above 80° F. in February have been recorded in Kandahar.[5] Occasional

[1] Dupree, 1951a, 1951b; Fairservis, 1952, 1956.

[2] The geology of this region is discussed in detail by John Zeigler, 1958. Climate, flora, and fauna are covered by Dupree, 1958.

[3] Fraser-Tytler, 1953; LeStrange, 1930.

[4] Mainly from Stenz, 1946, 1948.

[5] Personal communication from Mr. M. A. Holwig, Project Engineer, Morrison-Knudsen Afghanistan Company, Inc., while I was excavating at Shamshir Ghar.

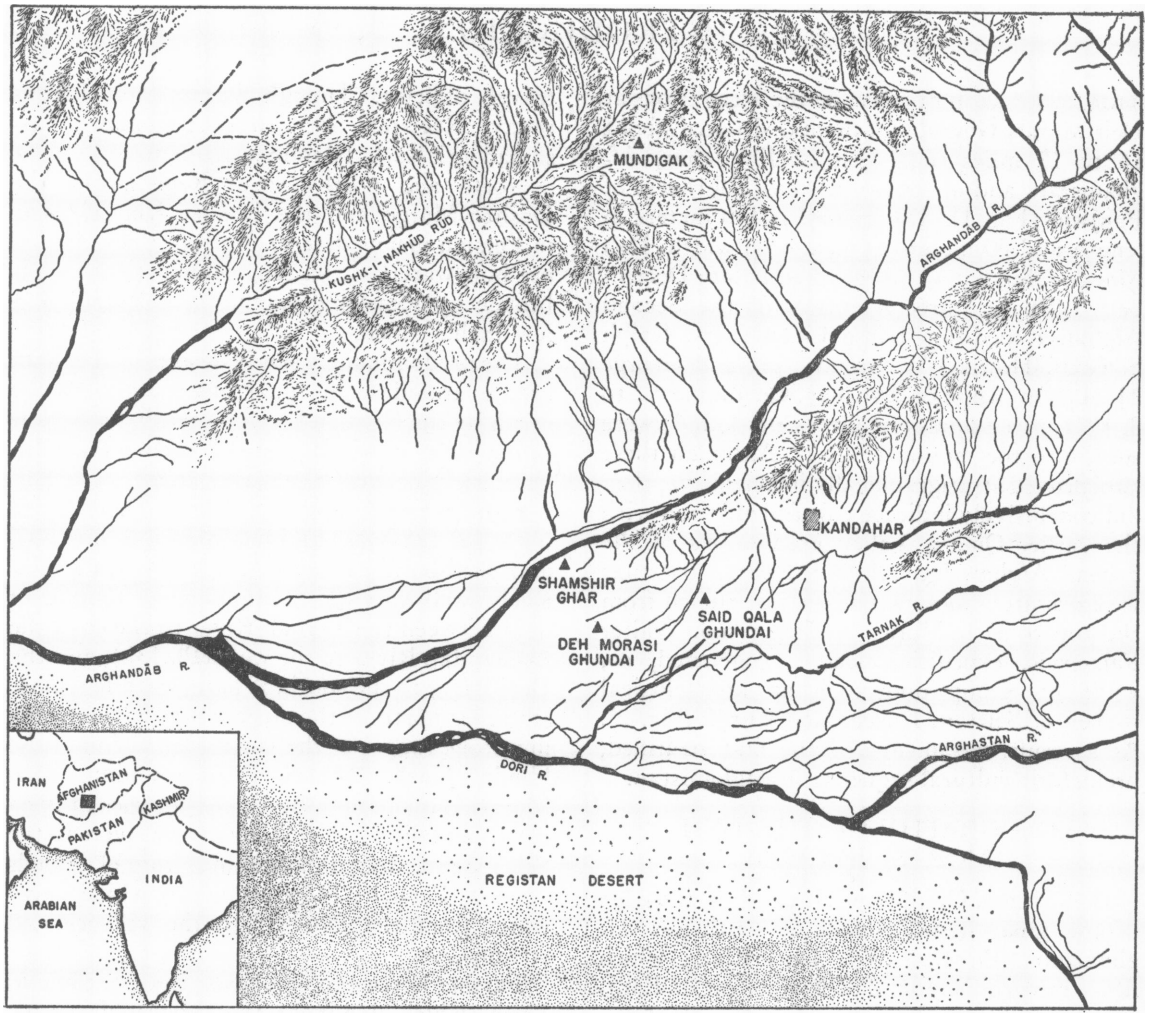


FIG. 1. Map of Afghanistan. Scale: One inch equals approximately 15 miles.

heavy rains mar the usually fine winter climate, but the standing water quickly evaporates.

Spring (March to May) varies both in temperature and precipitation. Most moisture derives from snow-melt water that rushes down from the high Hindu Kush, fills dry stream beds, and gradually increases the velocity, volume, and depth of the perennial rivers, such as the Arghandab, Helmand, and Dori.

Summer (June to September) is hot and dry; maximum day temperatures generally exceed 100° F. Temperatures of over 120° F. have been reported in the southwestern deserts. A noticeable decrease in temperature occurs in September; nights become chilly or even cold, but days remain warm to hot.

Autumn (October and November) is a brief transition period, with hot days and cold nights. Almost no rain falls during this period.

Snow almost never falls in Deh Morasi, and the vicious *bad-i-sad-o-bist ruz* (wind of 120 days) which slices through western Afghanistan during the summer and early fall has little effect on Kandahar Province. Its zone of greatest intensity is in Seistan, where sustained velocities of 40 to 50 miles per hour have been recorded.[1]

VEGETATION[2]

Lack of water is the main factor that limits

[1] Tate, 1909, 1910–1912.

[2] Main sources: Vavilov and Bukinich, 1929; Hooper, 1937.

the growth of natural vegetation in southwestern Afghanistan. The dominant vegetative cover of Kandahar Province consists largely of semi-desert grasses and shrubs, such as thistles of the genera *Cnicus* and *Cirsium*, camel thorn (*Albragi*), wormwood (*Artemesia*), several species of *Astragalus* (from which tragacanth gum is derived), and tamarisk (*Tamarix*). Few trees other than those planted by man exist, although scattered wild pistachio (*Pistacia* sp.) and plane (*Platanus* sp.) trees grow in the Hazarajat and the foothills near Kandahar City.

The southwestern deserts (e.g., Registan, Dasht-i-Margo, Dasht-i-Khash), which constitute about 20 per cent of the total area of Afghanistan, support little vegetation. Almost all this part of Afghanistan is less than 3000 feet above sea level.

Occasional oases occur; sparse clumps of tamarisk shrub and camel thorn found in many shallow depressions are reminders of once great seas that covered Central Asia. Along the uncultivated banks and flood plains of the Arghandab-Helmand river systems, tamarisk bushes grow in abundance. The Afghans call such groves *jangal*.

In spring the lowland deserts and the upland meadows of the Hazarajat are covered with a mantle of brightly colored flowers, but within a few weeks these are burned to a crisp.

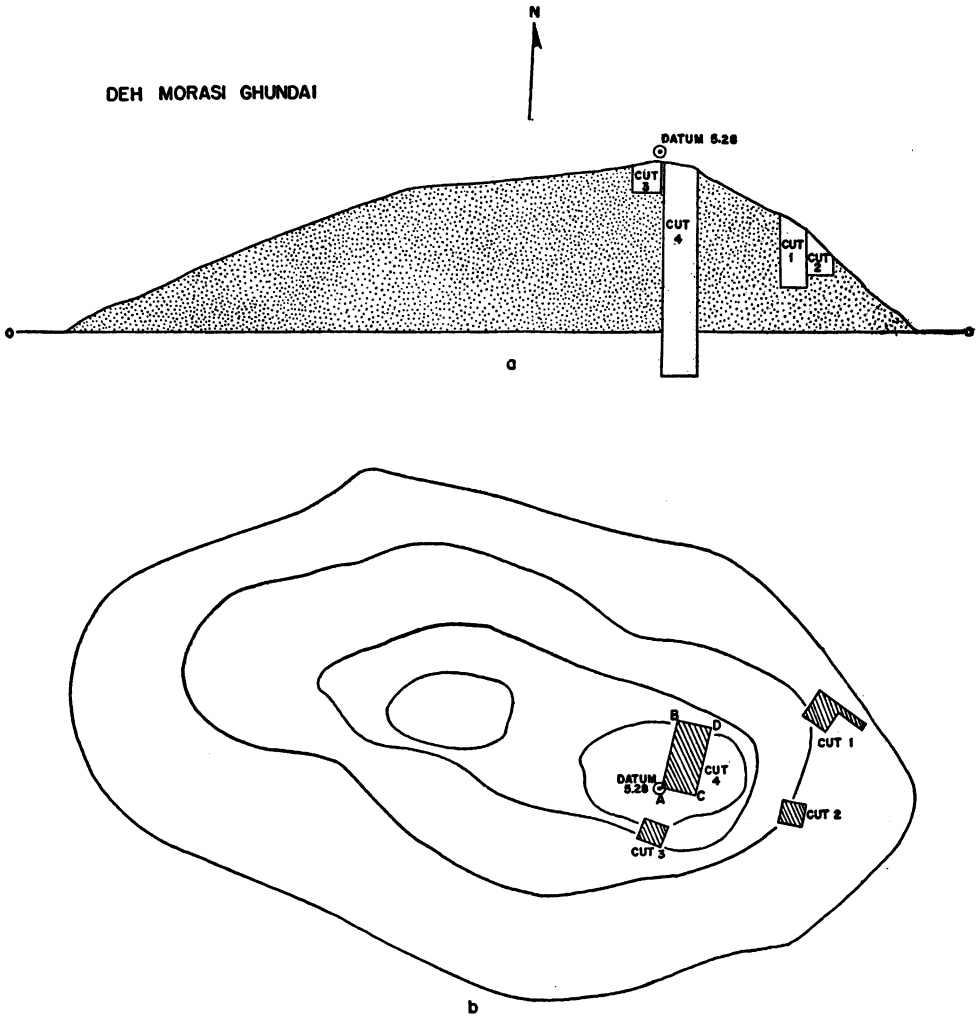


FIG. 2. Top and side views of Deh Morasi Ghundai. Scale: One cm. equals 12.5 meters. Contour lines at 2-meter intervals.

In spite of the absence of natural vegetation, the thin, riverine, flood-plain soils of Kandahar Province are extremely fertile. On this thin, restricted, outer layer of soil the farmers of southwestern Afghanistan annually raise surpluses, using primitive but effective methods of irrigation: e.g., open canals and *qanats*. I use the word "primitive" to denote technologically inferior by Western standards.

FAUNA[1]

Kandahar Province, to put it mildly, is not overpopulated with wild life. Scarcity of water and an arid climate limit the numbers and types of animals that exist. The faunal assemblage of Afghanistan, west of the Hindu Kush, is similar to that of the Iranian Plateau, with strong Transcaspian elements. The most common wild mammals are the gazelle (*Gazella subgutturosa*), the jackal (*Canis aureus*), the fox (*Vulpes cana*), the Cape hare (*Lepus capensis*), and such rodents as voles (*Blandfordimys afghanus*), hamsters (*Cricetulus migratorius*), field mice (*Mus musculus bactrianus*), jerboas (*Allactaga elater*), and susliks (*Citellus fulvus*). Also present are the boar or wild pig (*Sus scrofa*), the hyena (*Hyaena hyaena*), and the hedgehog (*Hemiechinus megalotis*).

Birds[2] are more numerous in species and number, but are as spottily distributed as are the terrestrial mammals. Desert and semi-desert game birds include various gallinaceous species, such as the rock or chukar partridge (*Alectoris graeca*), the sand partridge or *sisi* (*Ammoperdix heyi*), the francolin or black partridge (*Francolinus francolinus*), and the quail (*Coturnix coturnix*); a number of pigeons (*Columba* sp.), and doves (*Streptopelia* sp.); the houbara bustard (*Chlamydotis undulata*), the great bustard (*Otis tarda*), the little bustard (*Otis tetrax*), and several sand grouses (*Syrrhaptes paradoxus* and *Pterocles* sp.).

The Seistan swamps and marshes are wintering grounds for many northern-breeding waterfowl and waders; ducks (*Anas*, *Casavea*, and other genera), geese (*Anser* sp.), plovers (*Charadrius* sp.), sandpipers (*Tringa* and other genera), and the lapwing (*Vanellus vanellus*) are among the most common types. The demoiselle crane (*Anthropoides virgo*) breeds in the marsh areas. Most of the Seistan assemblage wanders up the Helmand or Arghandab as far as the Hindu Kush foothills northwest and west of Kandahar.

Other birds of Kandahar Province include hawks and eagles (*Falco*, *Buteo*, *Accipiter*, *Aquila*, and other genera), vultures (*Gyps*, *Aegypius*, and others), owls (*Otus*, *Bubo*, *Strix*), larks (*Alauda* sp., *Calandrella* sp.), swallows (*Hirundo* sp.), hooded crow (*Corvus cornix*), rook (*Corvus frugilegus*), jay (*Garrulus* sp.), magpie (*Pica pica*), thrush (*Turdus monticola*), warblers (*Hippolais sylvia*, *Phylloscopus*), shrike (*Lanius shach*), starling (*Sturnus vulgaris*), and sparrows (*Passer domesticus*, *P. moabiticus*, *P. montanus*).

Several varieties of fresh-water fish and crabs live in the rivers and lakes of south-central and southern Afghanistan, but they have not been adequately reported.

ETHNOGRAPHIC PRESENT (1951)[3]

The people of Deh Morasi village and Kandahar Province are predominantly Sunni Muslim Pathan. The vast majority of the population in southern and southeastern Afghanistan and the northwestern part of West Pakistan are also Pathan. An estimated 6,500,000 Pathan live in Afghanistan; 5,700,000, in West Pakistan.

Physically the Pathan are fairly tall (six-footers are not uncommon), stocky, well built, big boned, with broad bony faces and pronounced convex noses. Skin color varies from white to brown. Eyes are usually dark brown, but blue, green, gray, and mixed-colored eyes occur. Heavy beards and moustaches are popular. Men usually cut their black hair neck length or crop it close; women wear braids. Men wear loosely tied turbans, colorful turban caps (often tribally or regionally distinctive), vests or waistcoats, white cotton shirts with long tails, worn outside baggy trousers, and grass or leather sandals. Women wear blouses, baggy trousers or ankle-length skirts, and a head shawl which doubles as a veil. Men wear raw wool coats (*porsai*) in winter. Both sexes are extremely fond of elaborate floral embroidery and ornamental jewelry. Women ofter wear silver nose ornaments through the alae.

[1] Primary source: Ellerman and Morrison-Scott, 1946.
[2] Whistler, 1949.
[3] Also see Dupree, 1954, 1955, 1956a, 1956b, 1956c. A monograph on the ethnography of Afghanistan is in preparation.

The language of the Pathan is Pushto, an Iranian variant of Indo-European. The eastern and northern Pathan speak harsher dialects than the southern groups around Kandahar.[1]

In the patriarchal society of the Pathan, a man's responsibility is first to his nuclear family, and second, in descending order of intensity, to his father's lineage, his father's clan, his tribe, to the Pathan "nation," and lastly to either Pakistan or Afghanistan. Open democratic assemblies (*iirgahs*) are held at all social and political levels for discussions and decisions on important questions. Feuds between lineages and villages are frequent, but often several Pathan tribal groups unite to fight a common foe.

Marriage is by bride-price mutually agreed upon by the families concerned. The Koran permits four legal wives, but few Pathan can afford more than one.

Many miles of silted canals and abandoned, ruined settlements indicate that south-central and southwestern Afghanistan had a geographically wider population distribution and a greater population density in the recent past. The natural vegetation and wild life must have been correspondingly more plentiful. At present, however, the inhabitants are squeezed into narrow fertile areas that border the perennial rivers: Helmand, Arghandab, Arghastan, and Dori. South of the Arghandab-Helmand confluence, cultivation is limited to the immediate flood plain of the Helmand; the settlement pattern follows the river and avoids the hostile deserts. In some sections, especially near the city of Kandahar, *kharez* systems permit more extensive farming.

Few upland alpine meadows tempt the nomad to Kandahar or Farah provinces, but some nomadic Pathan (mainly Ghilzai) summer their flocks in the Hazarajat or in Turkestan and spend their winters near the larger towns, such as Farah, Giriskh, and Kandahar.

The village of Deh Morasi is a maze of unplanned, rectangular mud huts, many of which are inside mud-walled compounds. According to the head man, the population of Deh Morasi included 80 able-bodied warriors out of a total of 300 males, including boys and old men. We could not learn the exact number of women, but the head man intimated that the sex ratio was approximately equal. All healthy males, including pre-adolescent boys, aid in cultivating the soil. Important crops grown are wheat, barley, maize, grapes, and melons. Vegetables such as carrots, various greens, beans, and peas are grown mainly for local consumption.

The social organization of the village has changed radically in the last 75 years.[2] Before the Second Anglo-Afghan War of 1878–1880, the sedentary Pathan of south-central Afghanistan (Farah and Kandahar provinces) lived in clan villages, or "clan communities" in Murdock's terminology.[3] Today, the Deh Morasi males belong to four different Pathan clans: Barakzai (the most numerous and the clan of the head man), Alachozai, Popolzai, and Nurzai. Several Farsiwan (Persian) families also live in the village.[4]

Basically, the total cultural flavor of Afghan villages like Deh Morasi has remained unchanged for at least 4000 years. Pathan have been born, lived, and died, mud-brick and adobe huts have fallen and others have been built on their ruins, but the scenery and economy have remained virtually unchanged. True, the old clan village has almost disappeared, Islam has replaced earlier religions, and most plows today have iron tips; but fundamentally the Deh Morasi Pathan farmers live in the midst of a technological Neolithic plenty, roughly analogous to the Early Iron Age, as described by Childe.[5]

The farming village and its symbiotic partner, the nomadic camp, are still the primary economic units. Many groups once exclusively nomadic have now become either semi-nomadic or completely sedentary because of political and demographic pressures.

Empire builders and conquerors have always been transients in the Middle East; the villagers, like the crops they grow, are firmly planted and nearly immutable. Charles Metcalfe, one of the great British administrators in India, said in 1830: "The village communities in India are little Republics, having nearly everything they want within themselves, and

[1] See Penzl, 1955, for an excellent study of the Pushto spoken in Kandahar.

[2] Temple, 1879, discusses the village system in Kandahar Province in some detail.

[3] Murdock, 1949, 74.

[4] The social and historical steps involved in the breakdown from single-clan to multi-clan villages are discussed by Dupree, 1954, 1956b.

[5] Childe, 1946, 177–197.

almost independent of any foreign relations, they seem to last where nothing else lasts. Dynasty after dynasty tumbles down; revolution succeeds to revolution; Hindu, Pathan, Mughul, Mahratta, Sikh, English are masters in turn, but the village communities remain the same."[1] This general statement could be extended to include the Pathan villages, even though internal evolution has shifted certain economic and social emphases, and external events have to some extent affected all aspects of life in the modern Middle East and South Asia.

The nearest representatives of central government power live at Panjwai, capital of Panjwai sub-province. A road, negotiable by motor in good weather, runs from the city of Kandahar to Panjwai town, passing to the north of Deh Morasi. Because of the maze of cultivated fields (especially vivicultural hillocks) and open ditches between the road and the village (Pl. 13), it is virtually impossible to reach Deh Morasi by "jeep."

The Deh Morasi Pathan live limited, reasonably devout lives, fettered only by the narrow breadth of their collective and individual experiences. They are tough, emotionally and physically, suspicious of strangers, but nevertheless hospitable. Their troubles, like those of all Pathan, are caused by a lack of *zar* (gold), *zan* (women), and *zamin* (land), or so says a Pushto proverb.

[1] Spear, 1952, 132–133.

EXCAVATIONS AND STRATIGRAPHY

As mentioned above, Cuts 1, 2, and 3 (Fig. 2) were sunk in Deh Morasi Ghundai by Lilien, Stoudt, and MacClellan. A few painted sherds from these cuts indicated possible close relationships with the prehistoric ceramic traditions of the Quetta Valley. With Fairservis' blessing, I excavated Cut 4 (Figs. 2–3), a test trench, 2 meters wide by 6 meters long, which cut through the heart of the mound from the summit deep into virgin soil. Point A on Fig. 2b is 5.28 meters above the flood plain. We terminated excavation at 6.6 meters below point A, after the workmen had penetrated almost a meter of sterile flood-plain silts and struck the local winter water table. The last sherds (three, probably intrusive) were found in the 5.80–6.00-meter level.

The Pathan workmen were taught to excavate in 20-cm. levels, using local shovels. Lack of time forced me to excavate in 20-cm. increments instead of the more desirable 10 cm. Cut 4 was completely dug between January 11 and 20, 1951, after which my wife and I left Afghanistan to join Prof. and Mrs. C. S. Coon of the University Museum, University of Pennsylvania, for excavations in Iran.[1]

At the depth of 2 meters, we cut a step 1.5 meters from B–D (Fig. 2b) to facilitate dirt removal. Therefore, the trench area excavated below 2 meters is 4.5 meters by 2 meters.

The division of labor at the site kept seven to 10 workmen busy during the period of excavation: two men with shovels in the deep part of the cut; one or two on the 2-meter step; two or three men carrying excavated dirt in buckets or wooden boxes from the trench to the screens; and three men on two screens.

After the workmen reached a depth of 4 meters, they passed up the excavated debris to the 2-meter step in a bucket tied to a rope (Pl. 14a). After 5 meters, they used the rope and bucket, boom fashion, to pull the dirt from the bottom of the cut (Pl. 14b).

When unusual items, such as skeletons, tamped earth floors, or architectural remains, appeared in the trench, the shoveling was discontinued, and small picks and brushes were used to expose and clean the objects in preparation for recording and photographing.

To insure accurate recording of the excavations, a field diary was kept in which general impressions and daily progress were noted. On find-data cards, numbered and kept in duplicate, we recorded in complete detail all the pertinent data necessary to the identification of any group of finds. Duplicate numbered tags attached to the find-data cards were placed inside and outside each container of finds, with identifying information as follows: date, site, level number, trench, and cut number, and centimeter-level number. Where necessary, explanatory sketches were added in the diary and on the find-data cards. The photographs taken were generally poor, because my flash attachment had been lost on a trip to the Panjshir area.

[1] Coon, 1957.

POTTERY TYPES

MY FEELINGS ABOUT POTTERY typology are outlined in a previous monograph.[1]

While still in Kandahar, I separated the sherds into gross categories based on decorated or undecorated surfaces: plainwares and painted wares. The latter included: black-on-buff or light brown surface (slip or self-slip), black-on-red surface (slip or self-slip), red-on-red or buffy surface (slip or self-slip). This rough count gave the total number of sherds excavated in Cut 4 (Table 1). About 1500 of the total of 6000 sherds were shipped to the American Museum of Natural History. The remainder, including almost all the painted sherds, are on deposit at the Kabul Museum. The sherd count of the undecorated wares at the American Museum is found in Table 2; the painted wares count, in Table 3.

The discussions of pottery types are based on the following criteria: form and function, construction, firing, paste, surface finish, surface color, and thickness:

Form and function mean shapes and uses of the pottery vessels.

Under construction I describe, if possible, the wares as handmade or wheelmade, and I also mention any noticeable peculiarities of manufacture.

Firing is discussed only if something unique should be mentioned. Technical data on firing are presented in Appendix 1.

Various aspects of paste are discussed: color, temper, texture, and hardness (on the Moh Scale). Color was determined by using the Munsell Color Charts[2] in the prescribed manner. The important Munsell color range designations are listed in Table 4.

Under surface finish and surface color the variations of the inner and outer surfaces of the sherds are described. Again the Munsell charts were used for the determination of the color.

Thickness gives the minimum, maximum, and mean thickness for each type.

In this section the types are defined; they are discussed in detail by level in subsequent sections of this monograph.

PLAINWARES

Although the individual sherds in this category are undecorated, it is possible that many are body sherds of painted vessels.

PANJWAI CREAM SURFACE WARE

Plate 21a-e

About 60 per cent of the total sherds shipped to the American Museum are of this type.

FORM AND FUNCTION: Two different categories of profiles appear: (1) a thick jar and bowl type; (2) a thin goblet and vase variety.

CONSTRUCTION: All vessels are apparently wheelmade.

FIRING: Probably made mainly with an oxidizing fire. See Appendix 1 for technical discussion of firing.

PASTE: *Color* (Table 5): Quite a range because of differential firing. but in general varies from a yellowish red (bowl shapes) to a reddish or reddish brown (goblet shapes). *Temper*: Most of the goblets are made with a compact, well-levigated clay, although mica flakes and minute limestone nodules are visible in some. The jar-bowl type has larger limestone nodules, and explosion holes are often present; the temper contains comparatively more limestone nodules than the goblet type. *Texture:* Generally smooth, except for the explosion holes and some gritty sand on outer surfaces. *Hardness:* A hardness test measures several different factors simultaneously. The results depend on the sharpness of the testing instrument, the pressure exerted by the tester, and other non-constant factors. With these precautionary notes, I continue. The hardness of the jar-bowl types ranged from 3.5 to 6.5, but an extremely hard sherd tested at 9. The hardness of the goblet type ranged from 3.5 to 5.5.

SURFACE FINISH: In almost all cases, a self-slip or mechanical slip is present on the outer surface; in only a few, on the interior (see Appendix 1 for an explanation of this phenomenon). Rag (?) marks common on the outer surface often appear on the interior as well. The cream self-slip is usually partially weathered off. A few sherds, especially above the 3-meter level, have a purposely roughened outer surface. Mica flakes and limestone nodules often show through the self-slip.

SURFACE COLOR (TABLE 5): The colors listed are a composite of the cream self-slip and the

[1] Dupree, 1958, 180.
[2] Munsell, 1919, 1929.

TABLE 1

PRELIMINARY SHERD COUNT, DEH MORASI GHUNDAI, CUT 4[a]

Period	Levels (in Cm.)	Field Nos.	Undecorated	Painted Sherds			
				Black-on-Buff or Light Brown	Black-on-Red	Red-on-Red	Glaze
Morasi IV	0–20	451	307	1[b]	1	—	5
	20–40	452	217	4	8	—	—
	40–60	453	327	2[b]	3	2	—
Morasi III	60–80	454	104	1	3	1	—
	80–100	455	222	4[c]	13	—	—
Morasi IIc	100–120	456	184	1	2	1	—
	120–140	457	203	4	10	1	—
	140–160	458	217	3	7	1	—
	160–180	459	201	—	7	2	—
	180–200	460	209	15	7	1	—
	200–220	461	161	13	10	1	—
	220–240	462	211	14	5	2	—
	240–260	463	203	8	6	4	—
	260–290	464	599	36	36	1	—
Morasi IIb	290–300	465	159	19	6	—	—
	300–320	466	146	8	19	2	—
	320–340	467	109	5	15	—	—
	340–360	468	201	12	17	—	—
	360–380	469	78	3	3	3	—
	380–400	470	46	3	3	3	—
	400–420	471	107	6	23	—	—
Morasi IIa	420–440	472	324	9	27	2	—
	440–460	473	191	2[b]	26	11	—
	460–480	1060	102	3	5	2	—
	480–500	1061	104	1	4	—	—
	500–520	1062	61	8	4	3	—
	520–540	1063	203	4	8	5	—
	540–560	1064	177	7	7	7	—
	560–580	1065	101	5	3	8	—
Morasi I	580–600	1066	52	—	—	—	—
	600–620	1067	3	—	—	—	—
			5529	201	288	63	5

Total number of sherds, 6086

[a] Count made in Kandahar, January, 1951.
[b] Brownish.
[c] Grayish.

underlying paste, which in every instance gave the self-slip a reddish hue.

THICKNESS: Range in thickness for the jar-bowl sherds is 0.2 to 1.3 cm.; mean, about 0.7 cm. All goblet sherds are 0.3 to 0.4 cm.

MAIWAND RED SURFACE WARE

Plate 21f-k

Almost all the rest of the plainware excavated at Deh Morasi Ghundai can be included in this category. The paste of the Maiwand Red Ware is basically the same as that of the Panjwai Cream Surface ware, but self-slips are generally absent.

FORM AND FUNCTION: Many different vessel shapes are included: jars, bowls, pots, goblets, beakers. Most of the bowl and pot bases are fire-burned; the bulk of this ware probably served as cooking and eating vessels.

TABLE 2

SHERD COUNT, UNDECORATED WARES, DEH MORASI GHUNDAI, CUT [a]

Period	Level (in Cm.)	Panjwai Cream Surface				Maiwand Red Surface		Badwan Buff Surface			Karim Cream Surface	Kandahar Coarse			Pushmul Red Slipped			Said Qala Coarse		Totals
		Body	Goblet	Rim	Base	Body	Rim	Type I	Type II	Rims I	Body	Body	Rim	Base	Body	Rim	Base	Body	Base	
Morasi IV	0–20	63	—	4	—	—	—	—	—	—	2	1	1	1	—	—	—	—	—	72
	20–40	102	—	20	—	—	—	—	—	—	4	—	—	—	—	—	—	—	—	126
	40–60	93	—	5	4	32	2	—	—	—	4	2	—	—	15	2	1	—	—	160
Totals		258	—	29	4	32	2	—	—	—	10	3	1	1	15	2	1	—	—	358
Morasi III	60–80	10	—	2	2	—	—	—	—	—	—	—	—	—	16	—	—	—	—	30
	80–100	5	—	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	7
Totals		15	—	3	2	—	—	—	—	—	—	—	—	—	17	—	—	—	—	37
Morasi IIc	100–120	30	10	1	—	—	—	6	—	—	1	—	—	—	—	—	—	—	—	48
	120–140	9	—	1	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	13
	140–160	73	30	8	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	114
	160–180	41	—	6	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	49
	180–200	16	—	7	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27
	200–220	42	—	5	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	50
	220–240	34	—	7	4	—	—	4	—	—	—	11	—	—	—	—	—	—	—	60
	240–260	28	—	5	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	37
	260–290	79	—	9	7	—	—	2	7	1	—	—	—	—	—	—	—	—	—	105
Totals		352	40	49	27	—	—	15	7	1	1	11	—	—	—	—	—	—	—	503
Morasi IIb	290–300	10	—	1	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13
	300–320	46	—	1	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	53
	320–340	24	—	6	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	33
	340–360	18	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19
	360–380	5	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8
	380–400	17	—	—	1	—	—	1	—	—	—	3	—	—	—	—	—	—	—	22
	400–420	6	—	2	2	—	—	1	—	—	—	4	—	—	—	—	—	—	—	15
Totals		126	—	11	17	—	—	2	—	—	—	7	—	—	—	—	—	—	—	163
Morasi IIa	420–440	38	—	6	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	50
	440–460	33	—	4	3	—	—	4	—	1	—	—	—	—	—	—	—	—	—	45
	460–480	2	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
	480–500	10	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12
	500–520	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	520–540	25	—	5	1	—	—	9	—	—	—	—	—	—	—	—	—	—	—	40
	540–560	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	2
	560–580	5	—	3	—	—	—	2	—	—	—	—	—	—	—	—	—	1	1	12
Totals		113	—	21	11	—	—	16	—	2	—	—	—	—	—	—	—	1	1	165
Morasi I	580–600	3	—	1	1	—	—	3	—	1	—	—	—	—	—	—	—	—	—	9
	600–620	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14	—	14
Totals		3	—	1	1	—	—	3	—	1	—	—	—	—	—	—	—	14	—	23
Grand totals		867	40	14	62	32	2	36	7	4	11	21	1	1	32	2	1	15	1	1249
Ware totals		1083				34		47			11	23			35			16		

[a] The sherds under consideration are only those brought to the American Museum of Natural History.

TABLE 3

SHERD COUNT, DECORATED WARES, DEH MORASI GHUNDAI, CUT 4

Period	Levels (in Cm.)	Painted Wares					"Rouletted"	Glaze	Totals
		"Quetta Ware"	Morasi Black-on-Buff Surface (Inside Decoration)	Nurzai Black-on-Red Surface (Inside Decoration)	Nurzai Black-on-Red Surface (Outside Decoration)	Popolzai Painted Rim			
Morasi IV	0–20	1	—	1	—	—	1	4	7
	20–40	3	—	4	—	1	—	—	8
	40–60	4	—	—	2	—	—	—	6
Totals		8	—	5	2	1	1	4	21
Morasi III	60–80	—	1	—	2	1	—	—	4
	80–100	3	1	1	7	1	—	—	13
Totals		3	2	1	9	2	—	—	17
Morasi IIc	100–120	2	—	1	—	—	—	—	3
	120–140	2	6	2	3	—	—	—	13
	140–160	1	1	3	1	—	—	—	6
	160–180	2	—	4	1	1	—	—	8
	180–200	12	1	5	—	—	—	—	18
	200–220	13	2	5	1	—	—	—	21
	220–240	5	7	4	1	—	—	—	17
	240–260	1	2	13	3	3	—	—	22
	260–290	25	22	19	2	—	—	—	68
Totals		63	41	56	12	4	—	—	176
Morasi IIb	290–300	9	6	5	2	—	—	—	22
	300–320	6	6	7	4	1	—	—	24
	320–340	4	3	5	—	2	—	—	14
	340–360	13	7	3	3	1	—	—	27
	360–380	2	2	4	—	—	—	—	8
	380–400	2	4	2	—	—	—	—	8
	400–420	5	17	11	2	—	—	—	35
Totals		41	45	37	11	4	—	—	138
Morasi IIa	420–440	7	4	10	3	1	—	—	25
	440–460	8	12	13	1	—	—	—	34
	460–480	4	1	4	—	1	—	—	10
	480–500	2	3	—	—	—	—	—	5
	500–520	3	5	4	1	—	—	—	13
	520–540	5	4	5	—	2	—	—	16
	540–560	2	6	6	—	2	—	—	16
	560–580	2	9	3	1	—	—	—	15
Totals		33	44	45	6	6	—	—	134
Morasi I	580–600	—	—	—	—	—	—	—	—
	600–620	—	—	—	—	—	—	—	—
Grand Totals		148	132	144	40	17	1	4	486

TABLE 4

MUNSELL COLOR DESIGNATIONS, DEH MORASI GHUNDAI POTTERY

Hue	Notation
2.5 Y	8/2
	8/4
5 Y	8/1
	8/3
	8/4
7.5 R	4/6
	6/6
	6/8
	7/6
	7/8
10 R	4/4
	5/4
	5/6
	5/8
	6/8
2.5 YR	5/6
5 YR	6/6
	6/8
	7/4
	7/6
	7/8
	8/1
	8/2
	8/3
	8/4
	8/6
7.5 YR	6/4
	7/4
	7/6
	7/8
	8/2
	8/3
	8/6
10 YR	7/4
	7/8
	8/1
	8/2
	8/3
	8/4

CONSTRUCTION: All vessels were probably wheelmade.

FIRING: Probably mainly in an oxidizing situation.

PASTE: *Color:* The range of core colors varies because of the firing differential. The general core color, however, tends to cluster about 5 YR 7/6; the range includes 5 YR 6/6, 5 YR 7/8, and 5 YR 8/4. The inner third of the sherds is almost invariably lighter than the outer two-thirds; several core centers are black or gray. *Temper:* Generally a uniform clay, with fine mica-sand; some limestone nodules, however, have diameters of 1 cm. *Texture:* Generally smooth, but with some holes where limestone nodules have weathered away; explosion holes are also present. *Hardness:* 3.5 to 6.5

SURFACE FINISH: Many sherds are fire-burned. Some sherds have a single channeled line on the outside above the shoulder. Mica flakes are rare on the inner and outer surfaces, especially when compared with the Panjwai Cream Surface ware. Rag marks, however, are common. A few sherds have an incipient burnish or rough polish, probably accidental.

SURFACE COLOR: There is little variation between the core color and the inner and outer surfaces. The mode is 5 YR 7/6; the range includes 5 YR 6/6, 5 YR 7/4, 5 YR 7/8, 5 YR 8/3, and 5 YR 8/4.

THICKNESS: Range, 0.2 to 1.1 cm.; mean, about 0.7 cm.

BADWAN BUFF SURFACE WARE

Plate 21o-s

Two variants of undecorated buff ware occur: (1) a light brown or pinkish buff type occurs above the 240–260-cm. level; (2) a greenish buff type occurs below Level 13. The two variants are found mixed in the 260–280-cm. level.

FORM AND FUNCTION: Variant 1 sherds indicate delicate goblets and stemmed vessel shapes: Variant 2 sherds probably formed bowl shapes.

CONSTRUCTION: All wheelmade.

FIRING: Variations in core and surface color caused by differential firing, probably principally oxidizing.

PASTE: *Color:* Core colors vary around 5 Y 8/4. *Temper:* Variant 2 clay is well levigated; Variant 1, less pure, with minute limestone nodules present. *Texture:* Smooth. *Hardness:* About 3.5.

SURFACE FINISH: Regular, striated rag marks in interior; haphazard rag marks on outside. Self-slip common.

SURFACE COLOR: Lighter than core paste: color clusters around 5 Y 8/3.

THICKNESS: Range, 0.5 to 0.8 cm.; mean, about 0.6 cm.

TABLE 5

COLOR DATA (MUNSELL), PANJWAI CREAM SURFACE WARE, DEH MORASI GHUNDAI

	1–2 meters[a]	2–3 meters	3–4 meters	4–5 meters	5–6 meters
Paste Core Colors	7.5 YR 7/6	5 YR 7/4	2.5 YR 5/6	5 YR 6/6	*5 YR 7/6*[b]
Type 1	7.5 YR 8/6	5 YR 7/6		5 YR 6/8	7.5 YR 7/8
		7.5 YR 7/6	5 YR 7/4	*5 YR 7/6*	10 YR 7/4
		7.5 YR 8/6	*5 YR 8/3*	7.5 R 6/6	
		10 YR 7/8	7.5 YR 7/4	7.5 R 7/6	
		7.5 R 7/8	7.5 R 6/8	7.5 R 7/8	
		10 R 5/8	7.5 R 7/6	10 R 5/4	
			10 R 5/6		
Type 2	2.5 YR 5/6	7.5 R 7/6			
	5 YR 7/6	7.5 R 7/8			
	5 Y 8/4				
Surface Colors	2.5 Y 8/4	*7.5 YR 8/2*	5 YR 8/1	5 YR 8/3	7.5 YR 7/6
Outside		10 YR 8/1	*5 YR 8/2*	10 YR 8/2	7.5 YR 8/2
			10 YR 8/4	10 YR 8/3	*10 YR 8/2*
			2.5 Y 8/2	2.5 Y 8/2	10 YR 8/3
			5 Y 8/1		7.5 R 7/8
Inside	2.5 Y 8/4	2.5 Y 8/2	5 YR 8/2	7.5 R 6/8	10 R 6/8

[a] Accurate color determinations could not be made for sherds from the upper levels (0–1 meter) because of their weathered condition.

[b] Modes, where significant, are italicized.

KARIM CREAM SURFACE WARE

Plate 21 l-n

This ware is found only in the upper levels, above 140 cm. It is possibly a sub-type of the Panjwai Cream Surface ware, but the sherds have several distinctive and easily identifiable characteristics.

FORM AND FUNCTION: Only body sherds were found; these suggest some type of large jar or bowl.

CONSTRUCTION: Wheelmade.

FIRING: Probably in oxidizing, then reducing fire.

PASTE: *Color:* Outer three-fourths of the core is "brick red" in color; inner one-third is grayish black. *Temper:* Fine sand and clay nodules are present in the core. *Texture:* Generally smooth. *Hardness:* Range, 4.5 to 5.5.

SURFACE FINISH: Rag marks inside and out; most of the self-slip is weathered away, except in the rag mark striations on the outside.

SURFACE COLOR: Outer surface is "brick-red"; inner surface is a lighter, pinkish color.

THICKNESS: Range, 0.7 to 1.1 cm.; mean, about 0.9 cm.

KANDAHAR COARSE WARE

Plate 23e-h

The Kandahar Coarse ware sherds represent a rather crude, utilitarian ware, superficially resembling the Said Qala Coarse ware. However, the Kandahar Coarse ware is redder in tone and not so gritty in texture. Several buffy green sherds found in the 220–240-cm. level are probably from the same overfired vessel.

FORM AND FUNCTION: None was determinable because of the weathered state of the sherds, but several were fire-burned and probably served as cooking and storage vessels.

FIRING: Probably oxidizing.

PASTE: *Color:* Reddish (10 YR 7/4) or buffy (7.5 YR 6.4). *Temper:* Mainly gritty sand; some chaff. *Texture:* Rough and pock-marked. *Hardness:* Range, 2 to 3.

SURFACE FINISH: Some evidence of cream or buffy self-slip, but surface usually very rough.

SURFACE COLOR: Varies about 10 YR 8/4.

THICKNESS: Range, 0.8 to 1 cm.

PUSHMUL RED SLIPPED WARE

Plate 22a-b

This ware superficially resembles the red

polished ware of Imperial Rome, and at Deh Morasi Ghundai occurs only from 20 to 60 cm. in Cut 4.

FORM AND FUNCTION: Base and rim sherds indicate bowls and plates.

CONSTRUCTION: Wheelmade.

FIRING: Several sherds are overfired, probably oxidizing.

PASTE: *Color:* Reddish (7.5 R 4/6) or reddish buff (7.5 YR 8/6). *Temper:* Fire clay, apparently well levigated. *Texture:* Smooth. *Hardness:* Range, 3 to 5.

SURFACE FINISH: Red slip or wash inside and outside; slip almost completely weathered off several sherds. Mica flakes shine through. One sherd has a partial burnish; several are partly polished on the outer surface.

SURFACE COLOR: Two reds: 10 R 4/4, 10 R 5/6.

THICKNESS: Rims, 0.3 cm. Bases, 0.6 cm.

SAID QALA COARSE WARE

Plate 23a-d

Sherds of this crude, brownish red and brownish buff ware are found only in the 600–620-cm. level, below the lowest charcoal concentration. One sherd in the 560–580-cm. level is probably intrusive. The Said Qala Coarse ware ties the top levels of Said Qala to the bottom levels of Deh Morasi.

FORM AND FUNCTION: No reconstruction is possible, but several fire-burned exteriors indicate use as cooking pots.

CONSTRUCTION: Impossible to determine.

FIRING: Probably oxidizing.

PASTE: *Color:* Core color varies from 10 R 5/8 to 10 YR 7/4. *Temper:* All chaff tempered, but coarse sand and limestone nodules (0.5 to 0.6 cm. in diameter) appear. *Texture:* Rough, pock-marked, pitted. *Hardness:* About 2.5.

SURFACE FINISH: Pitted, many chaff holes.

SURFACE COLOR: No slip or self-slip. Differential firing varies the surface color from 10 YR 7/4 to 7.5 R 7/8; some outer surfaces are even lighter and vary around 2.5 Y 8/2.

THICKNESS: Range, 0.8 to 1 cm.; mode, about 1.0 cm.

DECORATED WARES

Designs are discussed in detail by cultural level on pages 83–92, 102–103, 106–108, 111–112. (See also Pl. 22 and Table 3.)

Most Deh Morasi painted sherds have designs similar to those of Quetta ware and the Seistan painted wares. Fewer than 10 possible Quetta ware imports, however, were found. The most popular motifs at both Deh Morasi and the Quetta Valley are variations on the step or zigzag theme.[1] At Deh Morasi, 145 of the 475 painted sherds had step designs. Incidentally, none of the parallel or zigzag lines was drawn with a multiple brush; all were drawn freehand with a single brush.

The Deh Morasi finds differ fundamentally from the Quetta ware in several ways:

1. Of the 475 painted sherds found in Cut 4, 242 (more than half) had painted designs on the *inner surface* of the sherds. The designs on the classic Quetta ware are almost universally painted on the *outer surface* of the sherds.

2. The catalogue of Deh Morasi painted designs is much less extensive and elaborate than that of the Quetta Valley. Of course, only a miniscule fraction of the artifacts from Deh Morasi is represented in the collection.

3. The paint is either black, reddish, or brownish, depending on the firing time. Of the total 271 black-on-buff sherds, 23 have reddish designs.

4. None of the Deh Morasi Black-on-Buff Surface Painted ware has an intentional slip. Even the classic Quetta Black-on-Buff (Variant 1) as defined by Fairservis[2] is probably an unslipped ware with a self-slip.

5. Less than one-half (204) of the 475 painted sherds have black-on-red surface painted designs. Of the 204, 27 have a reddish design.

6. None of the Deh Morasi painted ware bases had a ring foot like those illustrated by Fairservis.[3]

Therefore, as indicated in the above discussion, four different painted wares are distinguishable at Deh Morasi (possibly all are local variants of the Baluchistan wares): (1) Black-on-Buff Surface ware of "Quetta Type" (Pl. 22h–j); (2) Morasi Black-on-Buff Surface ware (Pl. 22c, l), with the same ceramic character-

[1] Fairservis, 1956, 322.

[2] "Characteristically, Quetta ware is decorated with black painted designs in the areas between multiple rows of horizontal lines. Most of the design motifs are arranged so as to maintain this horizontal direction. Quetta Black-on-Buff has two variants: Variant 1, Buff-slipped; Variant 2 is identical in paste with Mian Ghundai Buff Plain" (Fairservis, 1956, 255).

[3] Fairservis, 1956, 254–255.

istics as the Panjwai Cream Surface ware; (3) Nurzai Black-on-Red Surface ware (Pl. 22d–g, k), with the same ceramic characteristics as the Maiwand Red ware; and (4) Popolzai Painted Rim ware (Pl. 22m–n).

The last-named type of bowl, with a straight or slightly rolled rim, occurred sporadically throughout the Morasi II and III levels. A painted rim seems to be the lazy potter's answer for minimum design and maximum utility, for this motif is common throughout all ceramic periods in the Middle East. The design occurs on both Panjwai Cream Surface and Maiwand Red ceramic types.

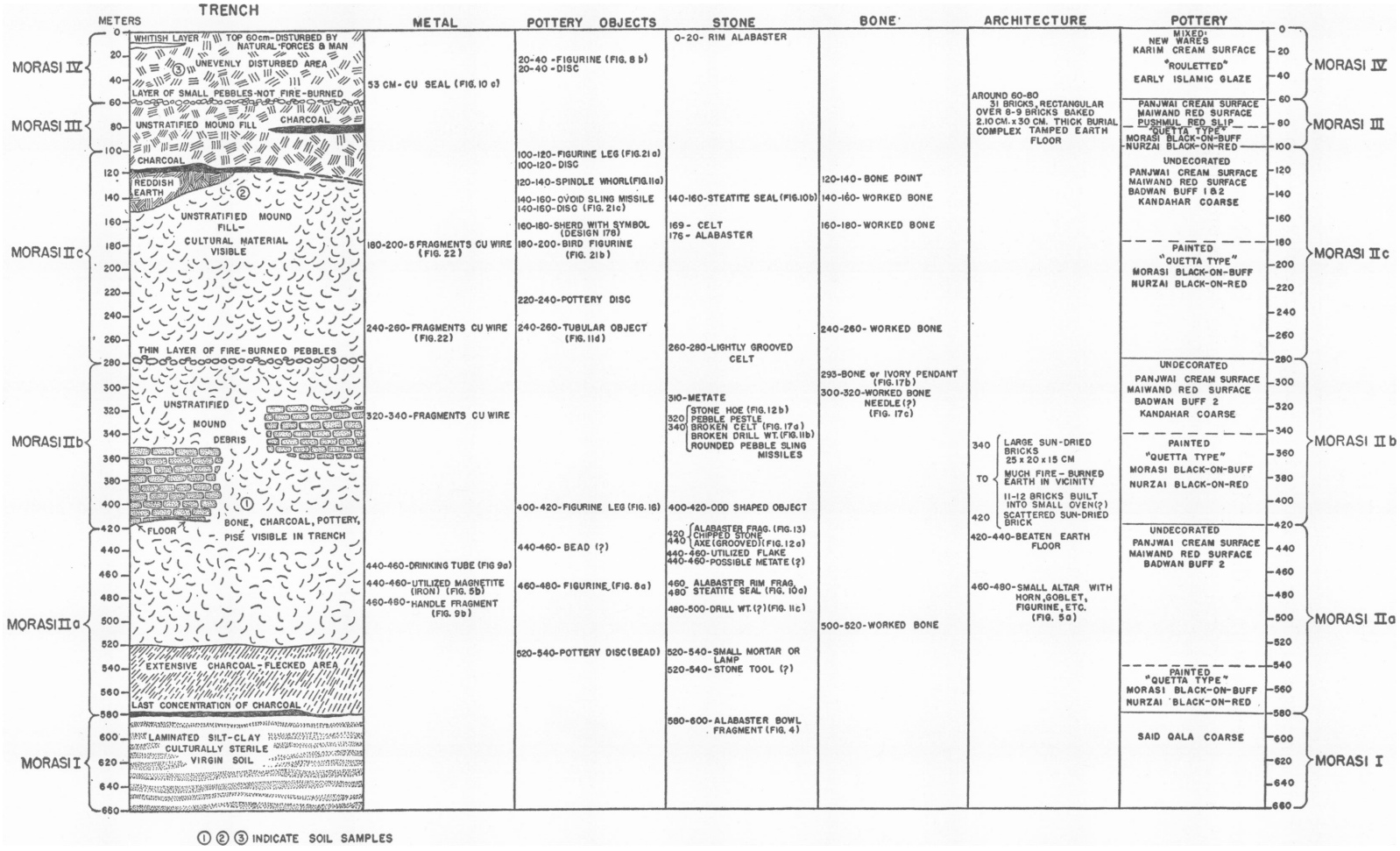


FIG. 3. Stratigraphic and cultural chronological outline of Deh Morasi Ghundai.

CULTURAL DEVELOPMENT AT DEH MORASI GHUNDAI[1]

THE REMAINS of the material culture uncovered at Deh Morasi indicate unbroken development from the bottom to the top of the cut. The cultural sequence from top to bottom is: Morasi IV: mixed zone, datum to 60 cm.; Morasi III: terminal peasant village, 60–100 cm.; Morasi IIa–c: peasant village levels, 100–580 cm.; Morasi I: coarse ware levels, 580–620 cm.; virgin soil.

MORASI I: COARSE WARE LEVELS (580–620 CM.)

An unconformity begins at 580 cm. (Fig. 3). Below 580 cm., only sherds of coarse ware were found. I discuss the finds below 580 cm. as a unit.

The only pottery type definitely associated with these levels was Said Qala Coarse ware. In the 580–600-cm. level, 49 sherds were found; in the 600–620-cm. level, three sherds were found; only 14 were shipped to the American Museum. The three sherds of Panjwai Cream Surface ware are probably intrusive, as is the alabaster rim fragment (Fig. 4). No sherds or other evidence of occupation occurred below 620 cm.

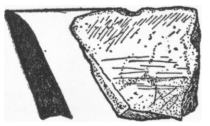


FIG. 4. Alabaster rim fragment, probably intrusive, Morasi I, Cut 4. ×1/2.

A grain of wheat found in the 580–600-cm. level was subsequently lost in shipment.

MORASI IIA: PEASANT VILLAGE LEVEL (520–580 CM.)

This includes the occupation level below the floor found in the 400–420-cm. level. The Morasi IIa strata consist mainly of unstratified mud debris with a charcoal-flaked clayey area from 520 to 280 cm.

ARCHITECTURE

No attempt was made to follow architectural lines. Lack of time precluded anything but a test sounding, but those architectural remains that appeared were recorded as the trench deepened.

The sun-dried brick wall and the pisé floor complex which ends at 425 cm. is discussed in the section on Morasi IIb (p. 100).

The only discernible architecture of any real interest is the complex of fire-burned, charcoal-flaked, sun-dried bricks, rocks (including a utilized magnetite nodule, Fig. 5b), pottery, pottery figurine, copper tube and seal, and bone and horn found in the center of Cut 4 at a depth of 468 cm. Remnants of a pisé floor underlay this complex (Pl. 17b; Fig. 5a).

Could this have been a household shrine? The earliest known use of goat (*Capra sibirica*) horns in a possible religious connection was

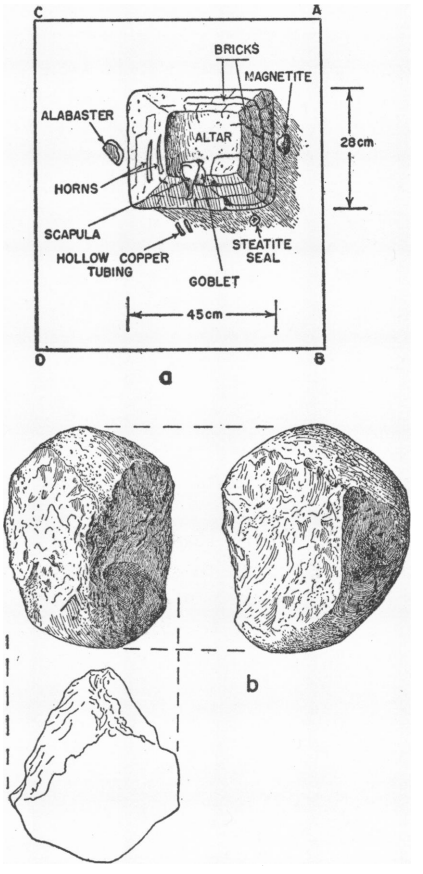


FIG. 5. a. Shrine complex, Morasi IIa, Cut 4. b. Utilized magnetite nodule, Morasi IIa, Cut 4.Slightly less than 2/5.

[1] Roman numerals and lower-case letters refer to phases, not breaks in cultural continuity.

found in the burial of a Neanderthal child at Teshik Tashk in Soviet Uzbekistan.[1] The horns of both wild and domesticated goats are now used to decorate the graves of holy men in Afghan Tajikistan, and the vestiges of a cult of the mountain goat are reported to survive in Soviet Tajikistan.[2] Recent excavations at Namazga in Soviet Turkistan have unearthed potsherds with mountain goat motifs throughout periods analogous to those under discussion at Deh Morasi Ghundai; also many actual mountain goat bones were discovered.[3] Therefore, the use of goat horns, symbol of a hunting or pastoral people, or both, does not seem strange in prehistoric Afghanistan. Pride in hunting as a man's task remains long after a people become sedentary.

We shipped one of the bricks from the shrine complex (Fig. 5a) to the American Museum for further study. It measured 18 by 16 by 12 cm. and had slightly plano-convex edges. Mat impressions were faintly visible on its slightly concave top (Pl. 18). It may have been subjected to low firing, but probably was superficially baked by fires in the vicinity of the shrine. The upper part of the cross-section (Pl. 19), is grayish, the next layer pinkish, and the center gray to gray-black, with a fist-sized pocket of partially decomposed organic material, possibly the most important find at the site. (Pl. 19 illustrates the cross-section.) The fracture line underneath the organic pocket suggests that the hardening process caused by neighboring hearths overlying the shrine did not affect the bottom of the brick. Therefore, when the brick was removed from the shrine complex, the lower layers of unfired mud broke from the brick matrix.

Dr. H. A. Wahl, Professor of Botany, the Pennsylvania State University, sent a sample of the positive organic material found in the center of the brick to Dr. Jason R. Swallen (Smithsonian Institution), who identified some of the material "as probably being *Hordeum spontaneum* Koch, which is the presumed ancestor of at least some of the present-day cultivated Barley."[4] Dr. D. A. Kribs, Professor of Botany, the Pennsylvania State University, photographed cereal fragments magnified 14 times. Detailed comparative research on the rest of the organic sample was undertaken by Prof. K. A. Chowdhury, Head of the Botany Department, Muslim University, Aligarh, India (see Appendix 3).

One other possibly architectural feature was recorded at 449 cm. on the A–B line, 210 cm. from A: a flat rock (18 by 24 by 10 cm.), with a shallow concave depression in its center, is probably a door-pole rest.

Undecorated Pottery

Some undecorated sherds, like those of red and buff wares, may be parts of decorated vessels.

PANJWAI CREAM SURFACE WARE

Plate 21a-e; Figure 6

Several sherds of Panjwai Cream Surface ware that occurred in the Morasi I level appear to have been washed in. The first sizable concentration was found in the 520–540-cm. level.

The profiles suggest small and large jars as well as a series of types of goblet. The latter (Fig. 6a–e), together with the large jars with thick, flat bases and flaring walls (Fig. 6f–m), are diagnostic of Morasi IIa. One base fragment is possibly from a beaker (Fig. 6n).

Two types of rims of jars are common: rims that are rounded or slightly beaded, with straight or almost straight profiles (Fig. 6o–y); and those that are beaded, which belong to a variety of globular body shapes (Fig. 6z–l′). Less common are profiles with flat, beaded rim, straight necks, and flaring shoulder (Fig. 6m′); and a slightly grooved rim, with possibly ovoid profile (Fig. 6n′).

MAIWAND RED SURFACE WARE

Plate 21f-k; Figure 7

Many Maiwand Red Surface sherds had rag (?) striations (channeled) inside and outside, probably made during construction. Most of the larger base sherds are fire-burned and were probably used as cooking jars or pots (Fig. 7d–j).

No identifiable goblets were found, but one fine beaker (Fig. 7a) was uncovered.

Two bases with feet (Fig. 7b–c) probably belonged to jars with globular profiles. Rims indicate open-mouthed jars or bowls with slightly flaring (Fig. 7k–p) or moderately beaded rims (Fig. 7q). Additional rim types were: flat, flaring rims (Fig. 7r), some slightly beaded (Fig. 7s); and a flat, clubbed rim, with a possibly ovoid profile (Fig. 7t).

[1] Movius, 1953.
[2] Andreev, 1924, 1927; Kisliakov, 1934.
[3] Masson, 1961, 211.
[4] Wahl, H. A., personal communication.

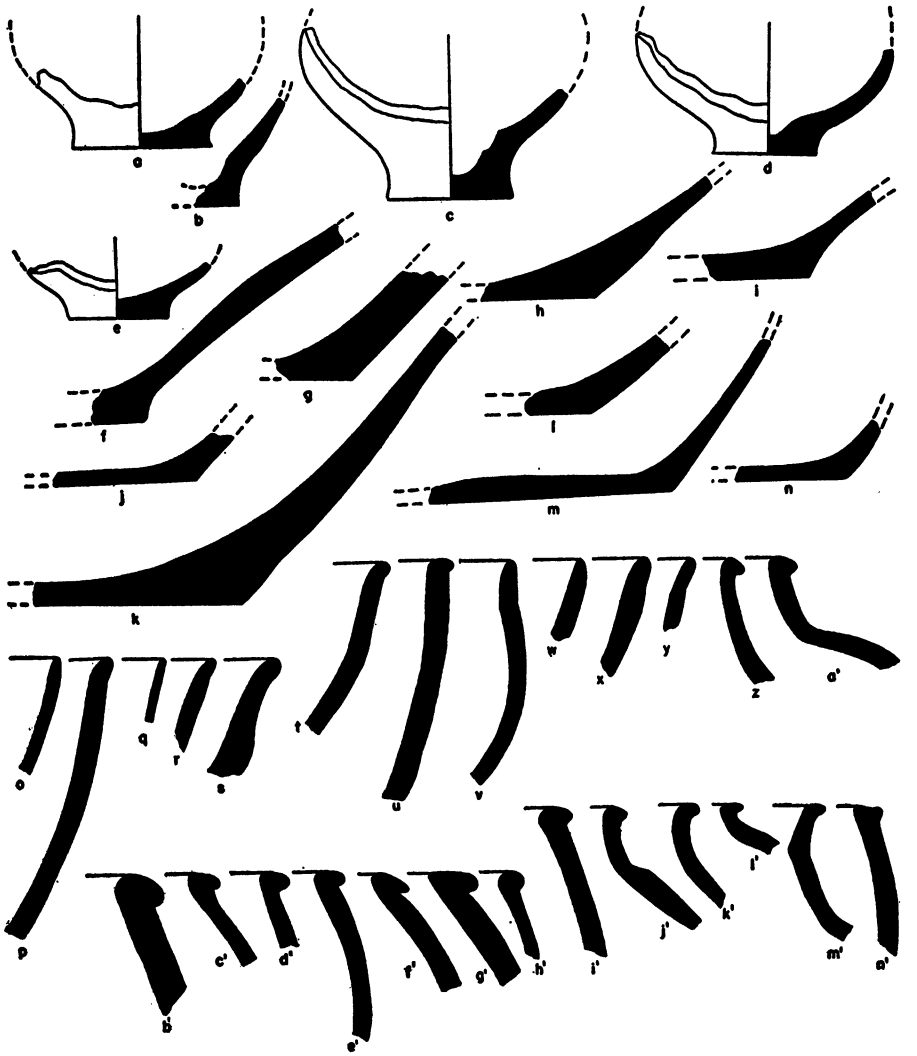


FIG. 6. Pottery profiles, Panjwai Cream Surface ware, Morasi IIa, Cut 4. Approximately ×2/5.

BADWAN BUFF SURFACE WARE

Plate 21s

Almost all of the handful of Badwan Buff Surface sherds were Variant 2 (Table 2). Neither rim nor base profiles were determinable.

An unusual, unfired fragment (Pl. 23n; Fig. 7u) that occurred deep (540–560 cm.) in Morasi IIa was probably an unfinished cup.

PAINTED POTTERY

WARE OF "QUETTA TYPE"

Designs 1–19

Several vessels and sherds of this Black-on-Buff Surface ware were found in the Morasi IIa levels. The finer pieces of goblets may have been imported. Most of the sherds were too fragmentary for profile reconstruction.

LOOPS (DESIGNS 1–4): All four of the loop designs are painted on the outside of the sherds. Two designs (3–4) have parallel vertical lines within the loop. Another (1) has two horizontal lines above the open, parallel, looping lines.

HORIZONTALS (DESIGNS 5–9): The most popular motif of Morasi IIa was a series of straight, parallel, horizontal lines, in almost all cases drawn near the rim (5–6). Two sherds have slightly wavy, horizontal, parallel lines (7). Often a series of such horizontals serves either as a base or a top for other motifs (8). A sherd with a horizontal wavy line below a series of horizontal straight lines is also represented (9).[1]

[1] See also Fairservis, 1956, Design 149, 284; subsequently referred to as W.A.F., i.e., W.A.F., 1956 (149), 284, means Fairservis, 1956, Design 149, on p. 284.

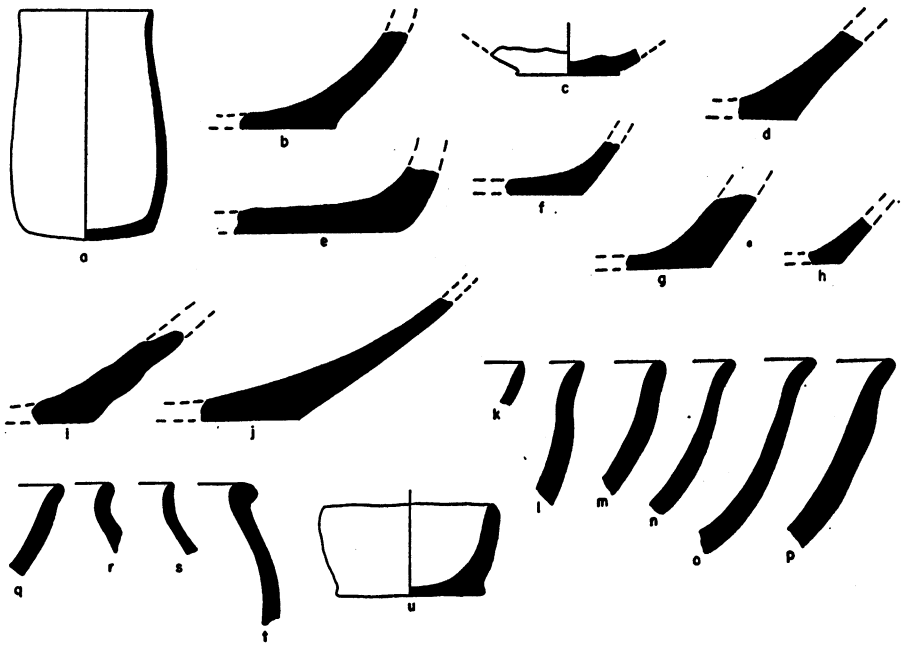


FIG. 7. Pottery profiles, Morasi IIa, Cut 4. a–t. Maiwand Red Surface ware. u. Fragment of unfired cup. Approximately ×2/5.

STEP DESIGNS (DESIGNS 10–11): Zigzag designs are popular in all the peasant village levels. An almost complete goblet (10) found in the shrine (Pl. 17b) complex has simple step zigzags [W.A.F., 1956 (182), 287]. A thin rim sherd (11) has multiple zigzags in combination with vertical lines [W.A.F., 1956 (188b), 287].

DIAGONALS (DESIGNS 12–15): One goblet fragment (12) had a single wavy diagonal line between horizontal straight lines [W.A.F., 1956 (251), 293]. Several sherds had straight or slightly curving diagonal lines, some fragmentary, enclosed by straight horizontal lines (13–15).

GRID WORK (DESIGNS 16–17): Several grid compositions occurred on open-mouthed beaker types, with repeated motifs from lip to base. The motifs appear to be more loosely and freely drawn than those of the classic Quetta ware.[1]

FLORA (DESIGN 18): One fragmentary sherd seems to represent part of a clinging or sprawling plant.

MISCELLANEOUS (DESIGN 19): The motif on one badly fire-burned sherd was unidentifiable.

[1] Fairservis, 1956, 324.

MORASI BLACK-ON-BUFF SURFACE WARE

Designs 20–41

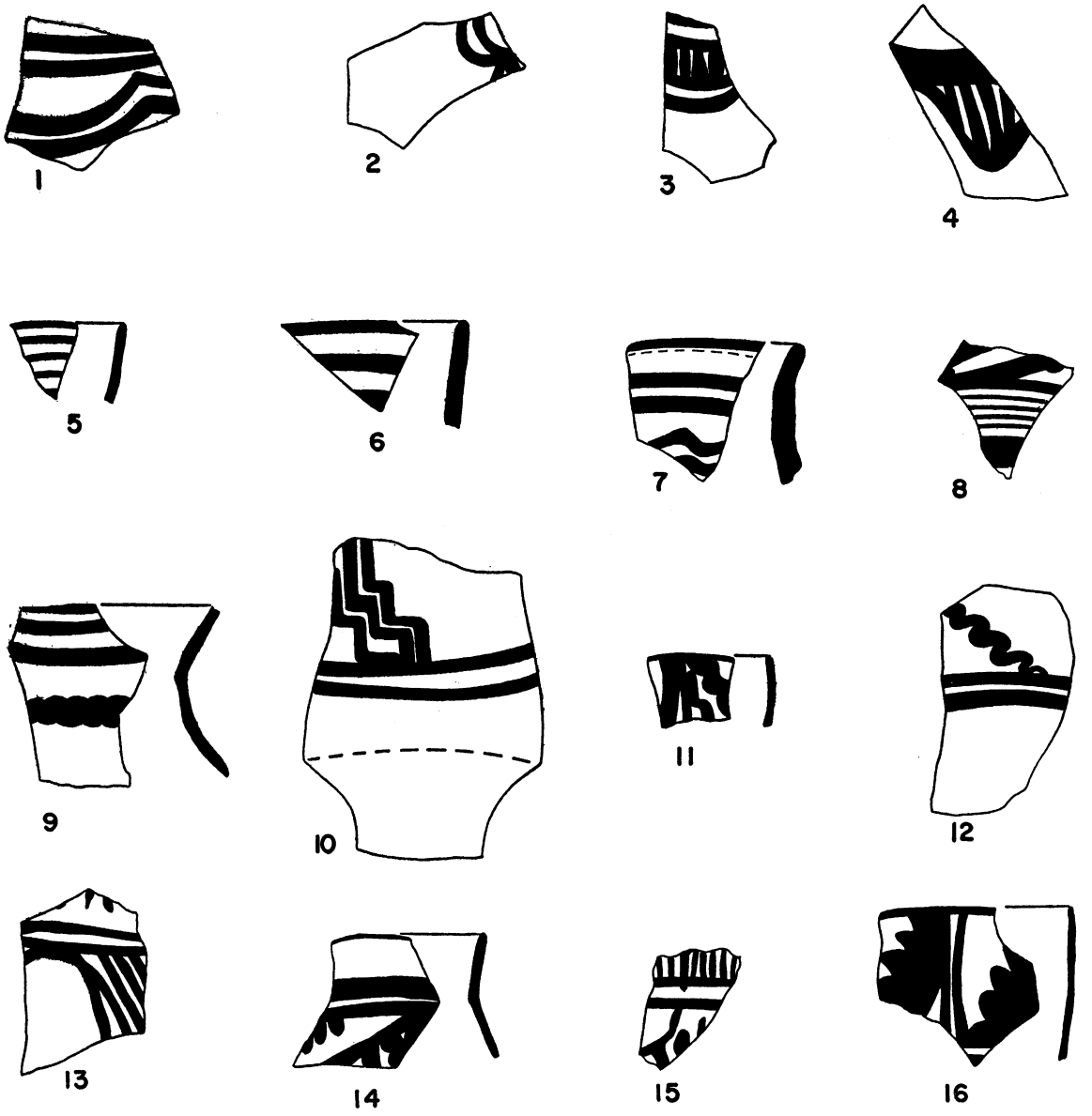
Many of these sherds have designs similar to those on the Quetta ware as reported by Fairservis.[2] The major differences between the designs on Quetta ware and those on the Morasi Black-on-Buff Surface sherds are that the painting on most of the latter types is on the inner surface, only rarely on the exterior.

FESTOONS AND VOLUTES (DESIGNS 20–24): Simple, open festoons occur (20–21) as well as more complex motifs, such as a horizontal zigzag inside the volutes (22), enclosing a sigma-like motif (23), or enclosing a wavy line (24). Wavy lines are common on Quetta ware [W.A.F., 1956 (149–150), 284].

HORIZONTALS (DESIGNS 25–26): Again, many motifs consist of a horizontal line or lines; for example, a chevron (25) and a wavy line (26).

STEP DESIGNS (DESIGNS 27–35): *Zigzag designs are diagnostic of Morasi IIa–c.* The inside step designs (27–32) extend from the inner lip of the rim to the base (27). The lines end abruptly inside the base (35). The designs on several

[2] Fairservis, 1956, 324.



DESIGNS 1–16. Ware of "Quetta Type."

sherds are casually drawn, wavy, and almost vertical (32–34).

DIAGONALS (DESIGN 36): Several sherds with freehand, parallel, diagonal lines were uncovered.

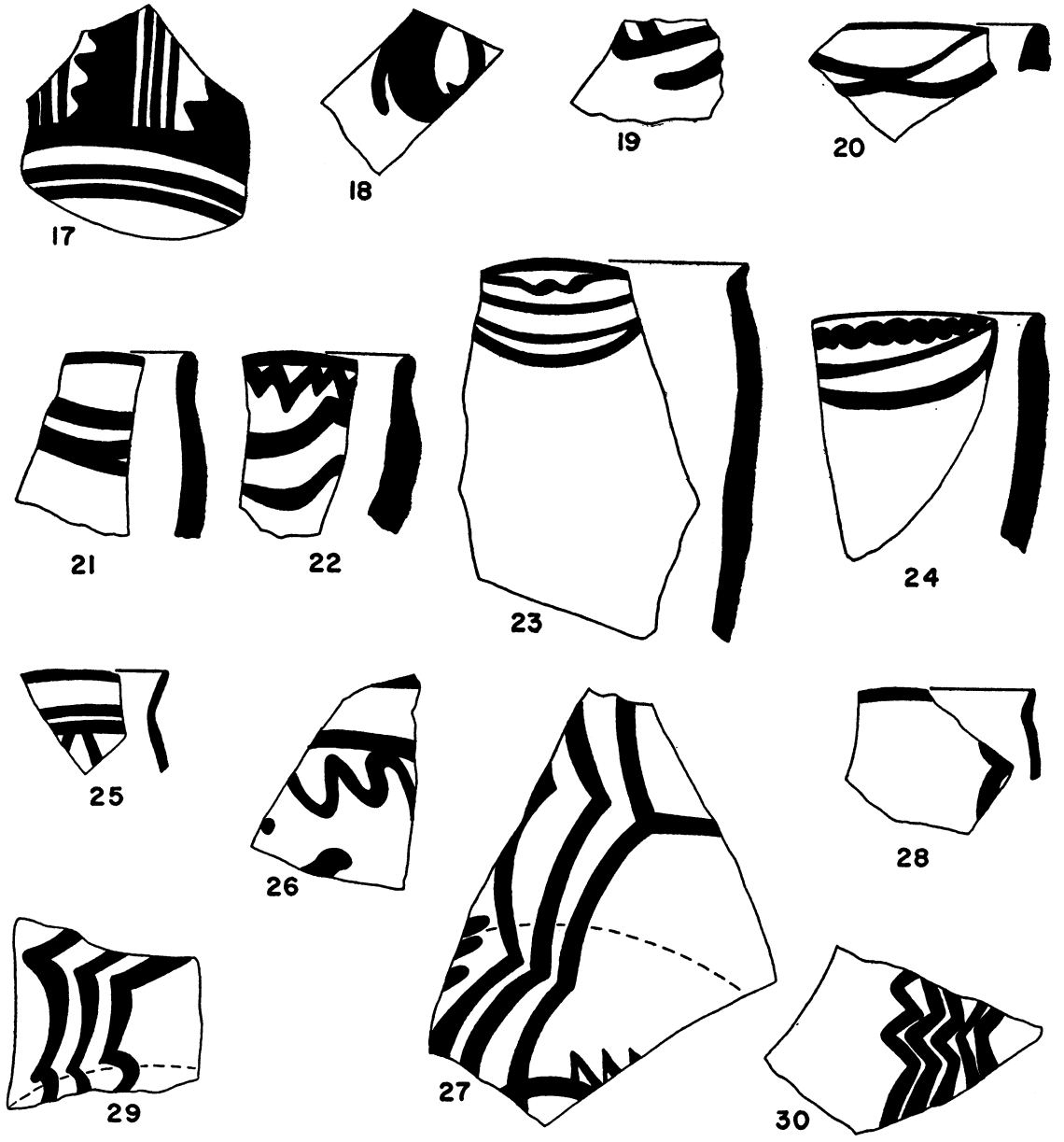
TRIANGLES (DESIGNS 37–39): Several triangular (37–38) and pseudotriangular (39) motifs were found, each triangle invariably filled with vertical (37), horizontal (38), or diagonal (39) lines.

LADDER (DESIGNS 40–41): Two sherds with ladder motifs appeared in the Morasi IIa levels [W.A.F., 1956 (468–469), 311].

NURZAI BLACK-ON-RED SURFACE WARE

Designs 42–59

As on the Black-on-Buff Surface ware, many motifs on the Nurzai Black-on-Red Surface sherds are artistically akin to those on Quetta ware.

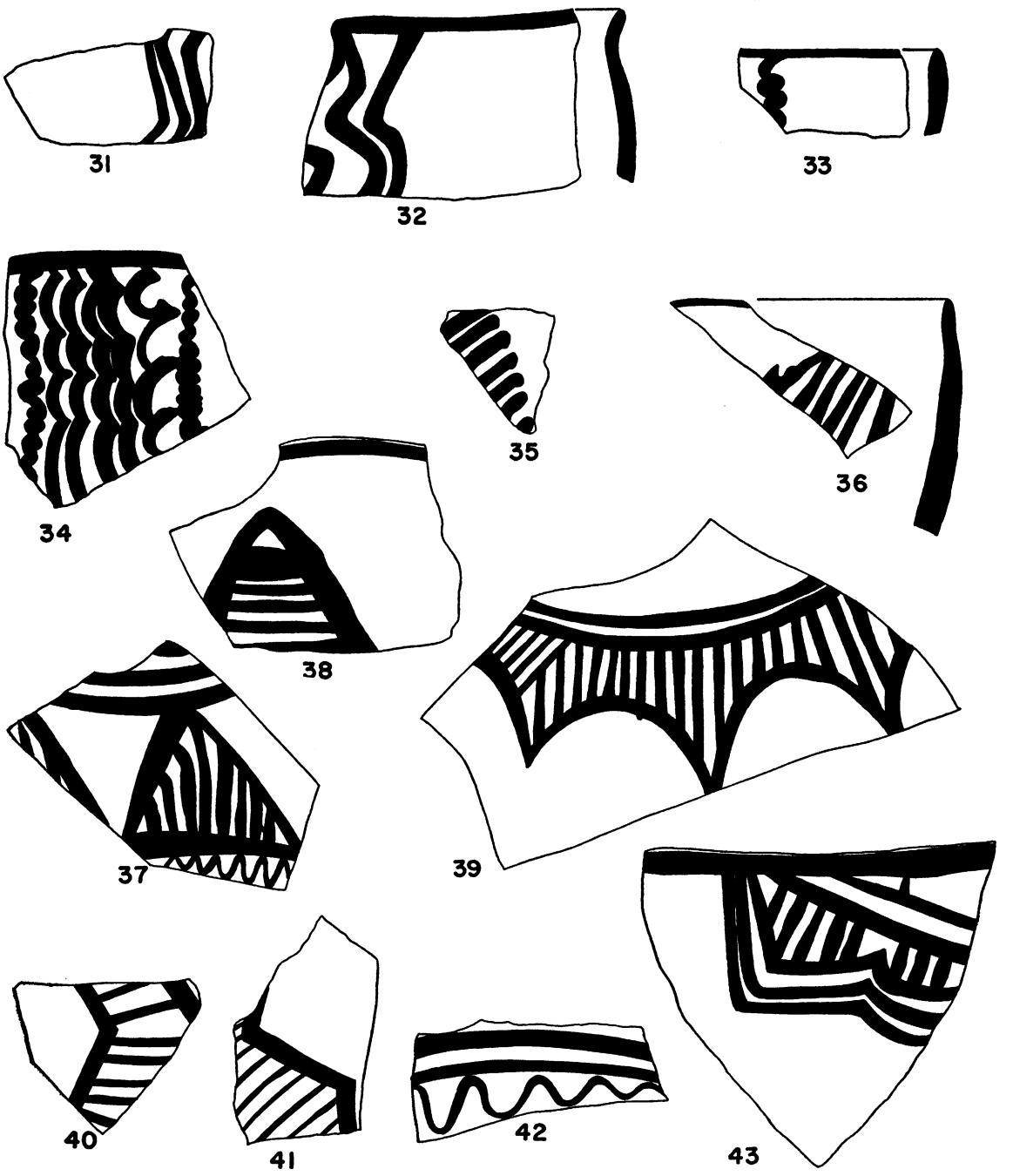


DESIGNS 17–19. Ware of "Quetta Type."
DESIGNS 20–30. Morasi Black-on-Buff Surface.

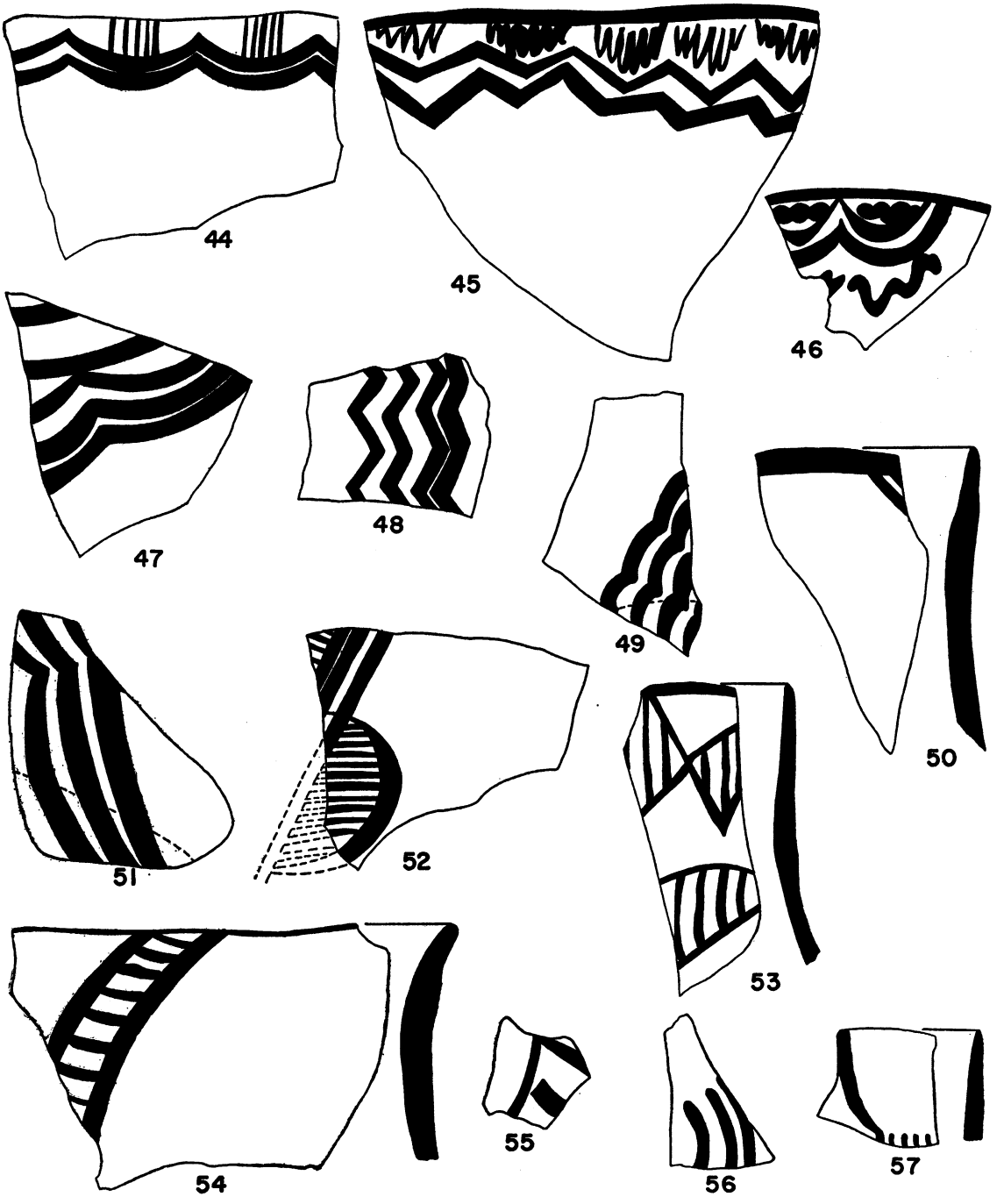
INNER DESIGNS, FESTOONS, AND VOLUTES (DESIGNS 42–47): These designs, extending from the rim, are painted inside fairly large bowls. Design 42 is the simplest of all. The volutes normally occur in pairs (43–46), and have straight vertical lines (43–44) or repeated wiggly lines (45) inside the loops. A repeated sigma-like motif and short wavy lines dominate Design 46. Repeated volutes below two horizontal lines (47) were found on one sherd [W.A.F., 1956 (114), 281].

HORIZONTALS: Straight horizontal lines were used to block out designs or to segment parts of the decorated areas on two sherds (43, 47).

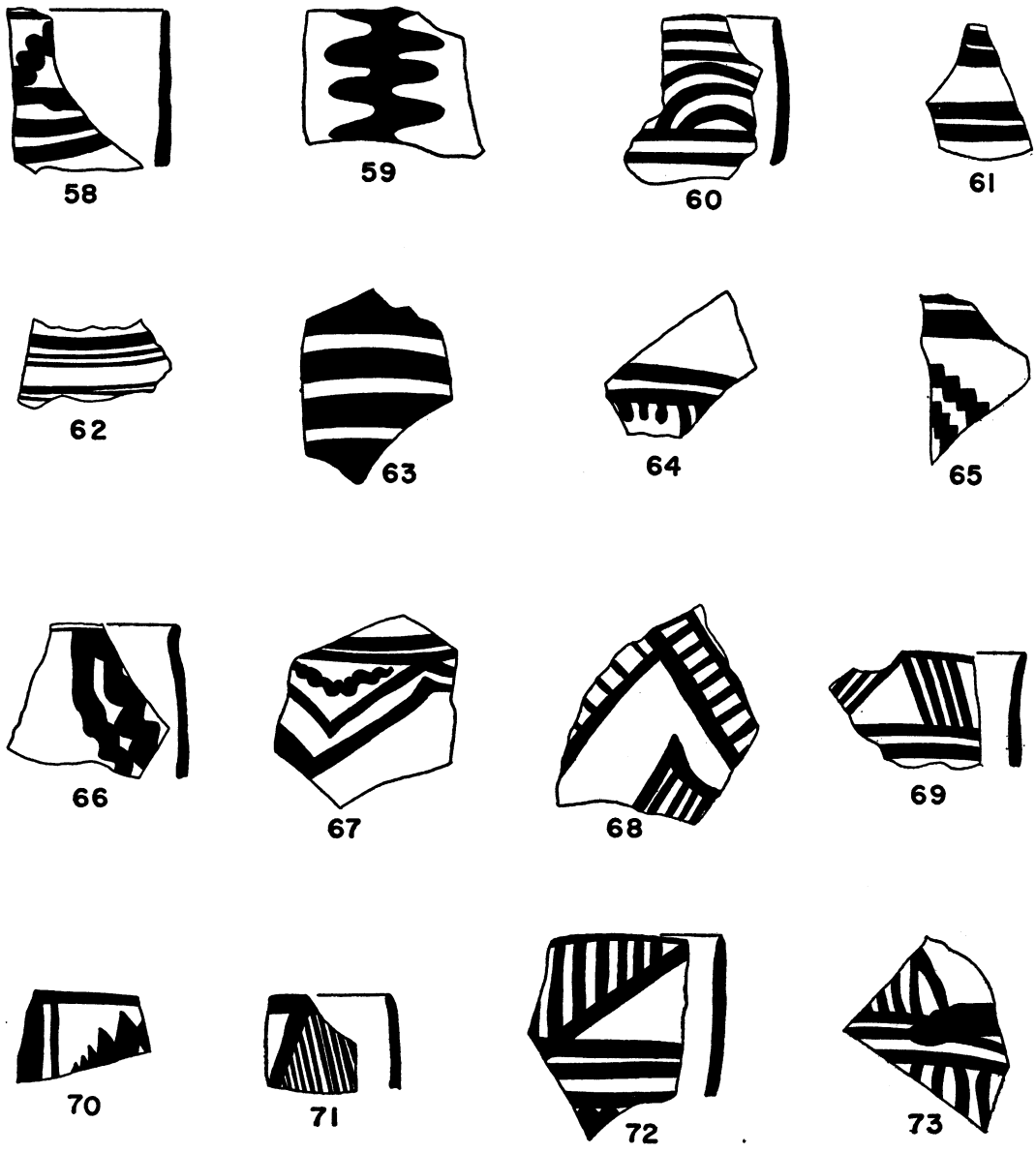
ZIGZAGS (DESIGNS 48–51): These are the same motifs as those found on the Morasi



DESIGNS 31–41. Morasi Black-on-Buff Surface.
DESIGNS 42–43. Nurzai Black-on-Red Surface.



DESIGNS 44–57. Nurzai Black-on-Red Surface.



DESIGNS 58–59. Nurzai Black-on-Red Surface.
DESIGNS 60–73. Ware of "Quetta Type."

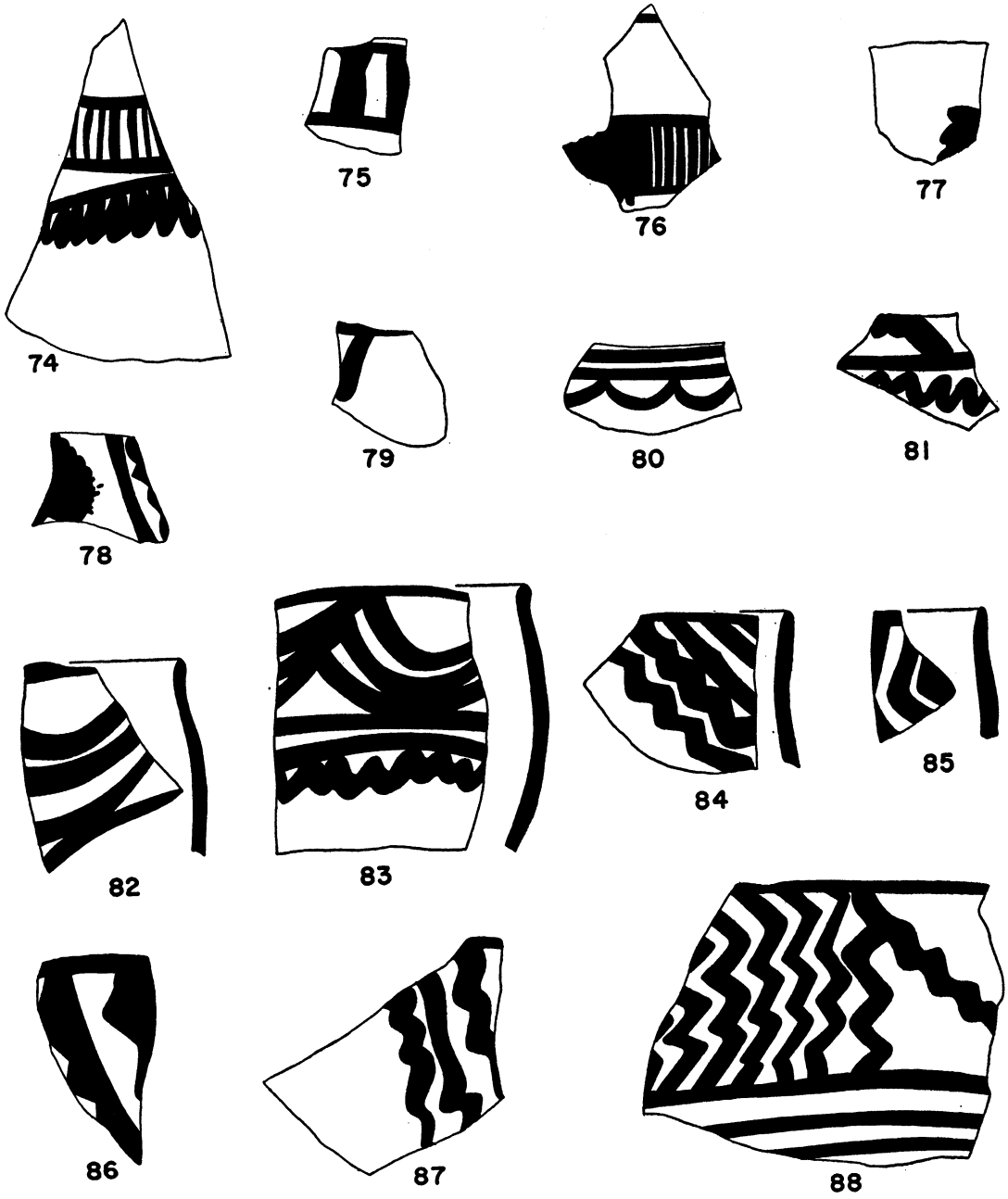
Black-on-Buff Surface ware, on flat-based bowls with flaring walls, or on beaker types. The multiple zigzags extend from the lip to the base on the inner surface of the vessels. In several instances the paint, as the result of firing, is a bright red.

DIAGONALS (DESIGN 52): A unique Morasi IV sherd has three straight diagonal lines which serve as a base for a series of horizontal straight lines enclosed by diagonal volutes.

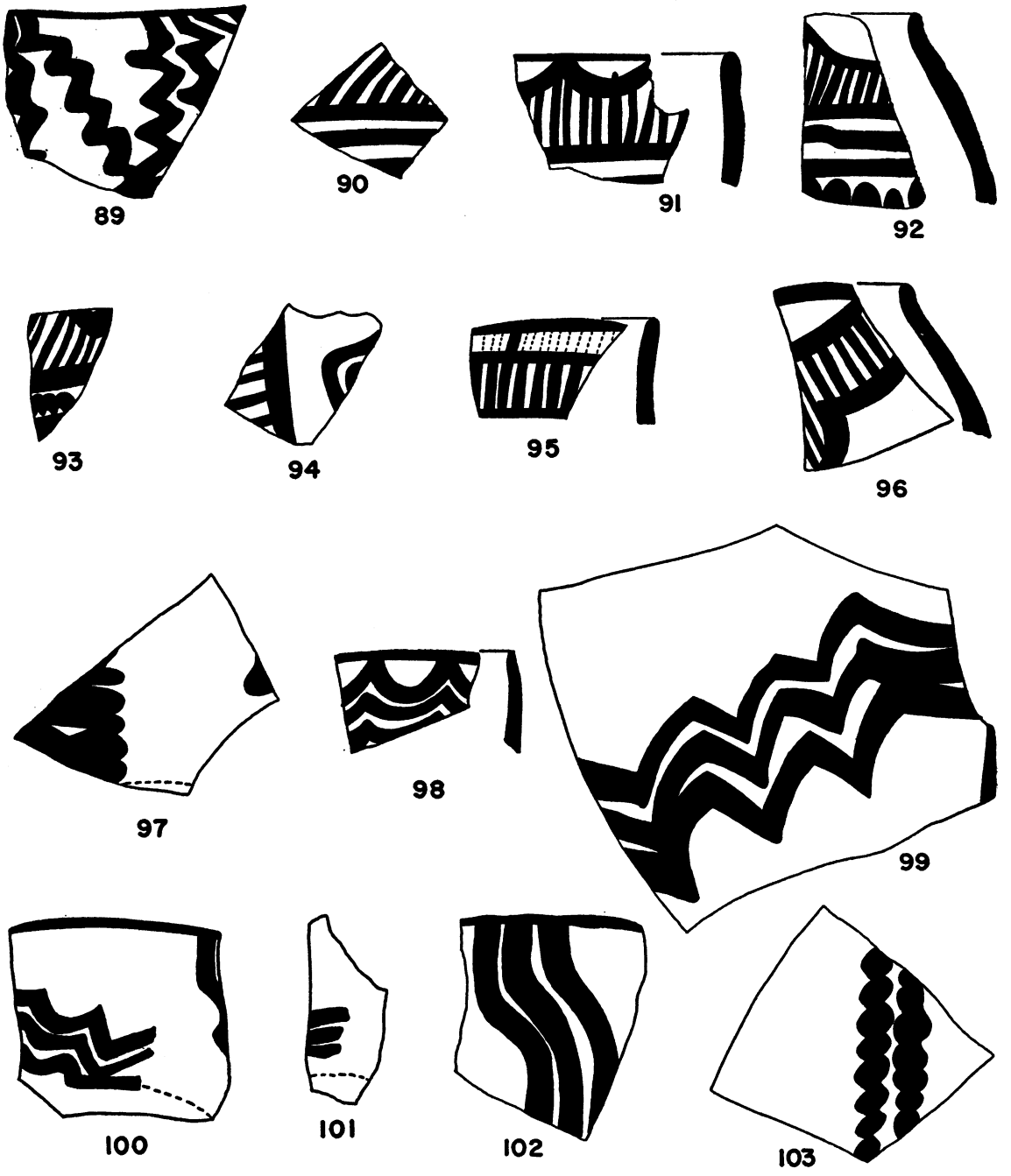
TRIANGLES, RECTANGLES, FILLED WITH HORIZONTAL LINES (DESIGN 53): Designs are similar to those on the Morasi Black-on-Buff Surface ware in Morasi IIa, except for one with opposing diamonds.

LADDERS (DESIGN 54): A curving ladder design extends downward from the rim.

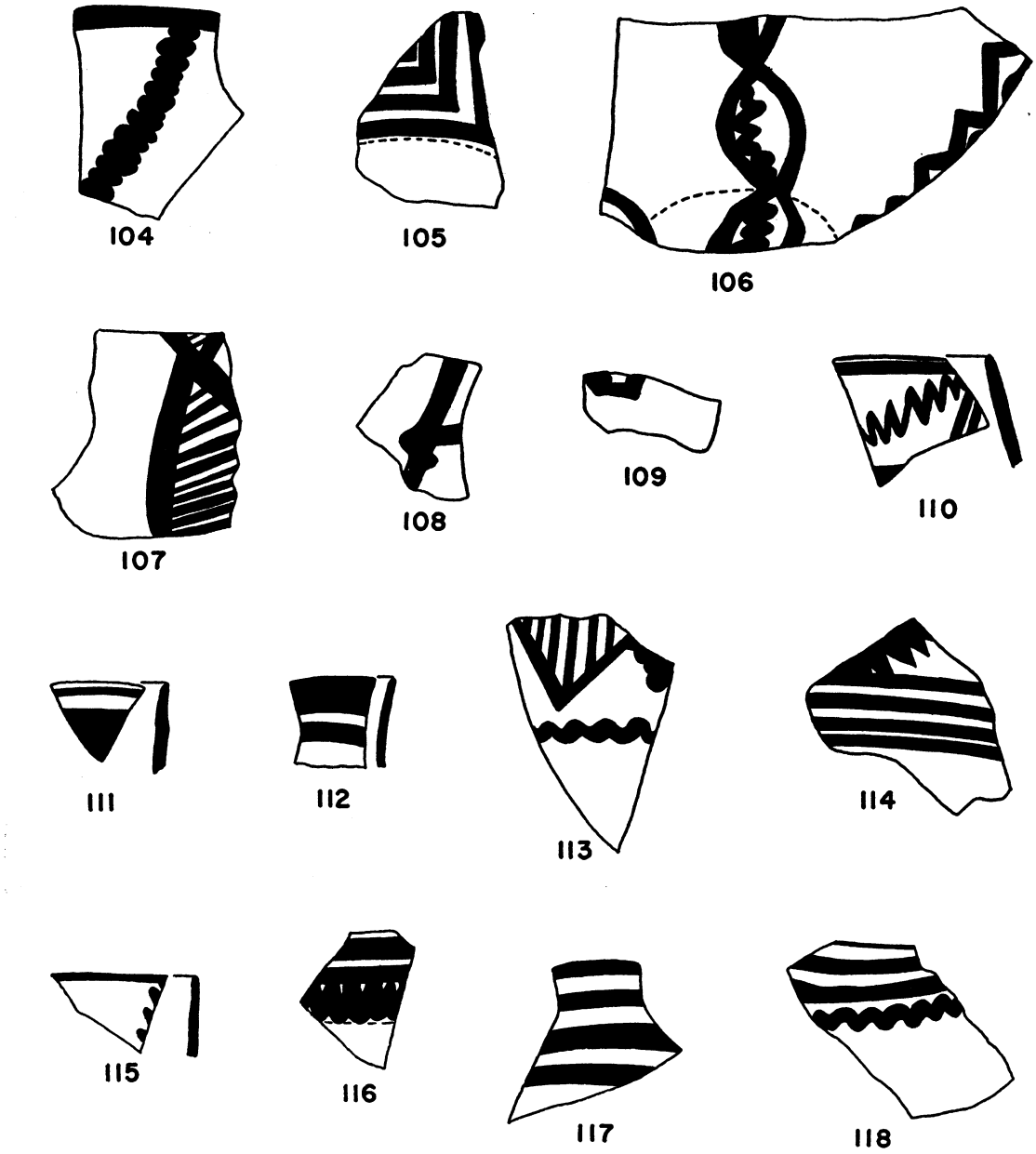
DESIGNS ON OUTER SURFACE (DESIGNS



DESIGNS 74–79. Ware of "Quetta Type."
DESIGNS 80–88. Morasi Black-on-Buff Surface.



DESIGNS 89–97. Morasi Black-on-Buff Surface.
DESIGNS 98–103. Nurzai Black-on-Red Surface.



DESIGNS 104–115. Nurzai Black-on-Red Surface.
DESIGNS 116–118. Ware of "Quetta Type."

55–59): Design 58 is a saw-toothed diagonal [W.A.F., 1956 (250), 292, and (251), 293], but the sherd is definitely not Quetta ware. It is Nurzai Black-on-Red Surface and may tie in with Quetta Black-on-Red Surface ware. Design 59 is wave-like, an exaggerated vertical wavy line.

UNUSUAL POTTERY OBJECTS

DISC: One disc of Maiwand Red Surface ware was found. Almost a perfect circle, it measured 2.7 by 0.5 cm.; it was probably a gaming piece, a weight, or a bottle stopper.

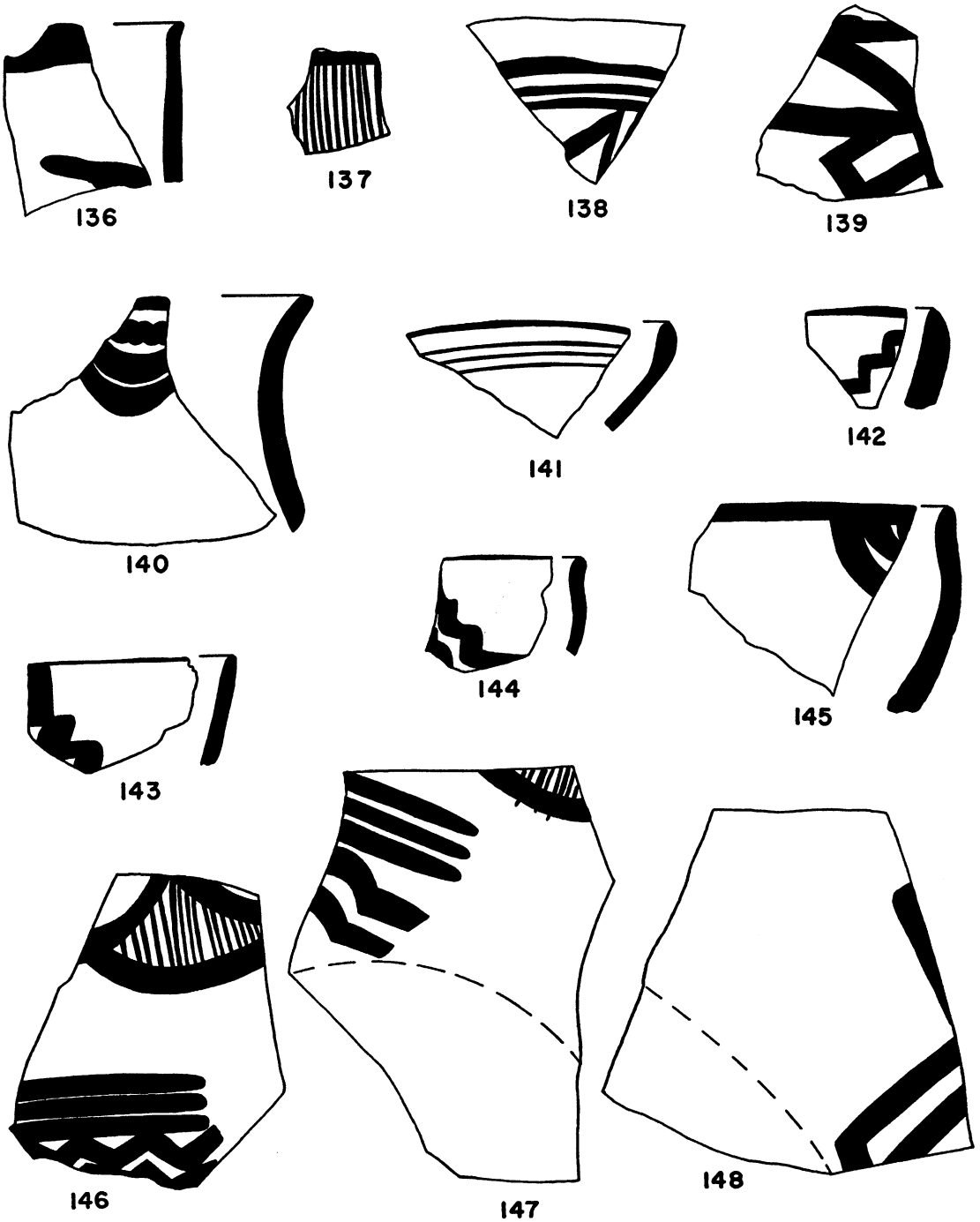
FEMALE FIGURINE (PL. 23o; FIG. 8a): An example of the familiar Zhob Valley female

DESIGNS 119–135. Ware of "Quetta Type."

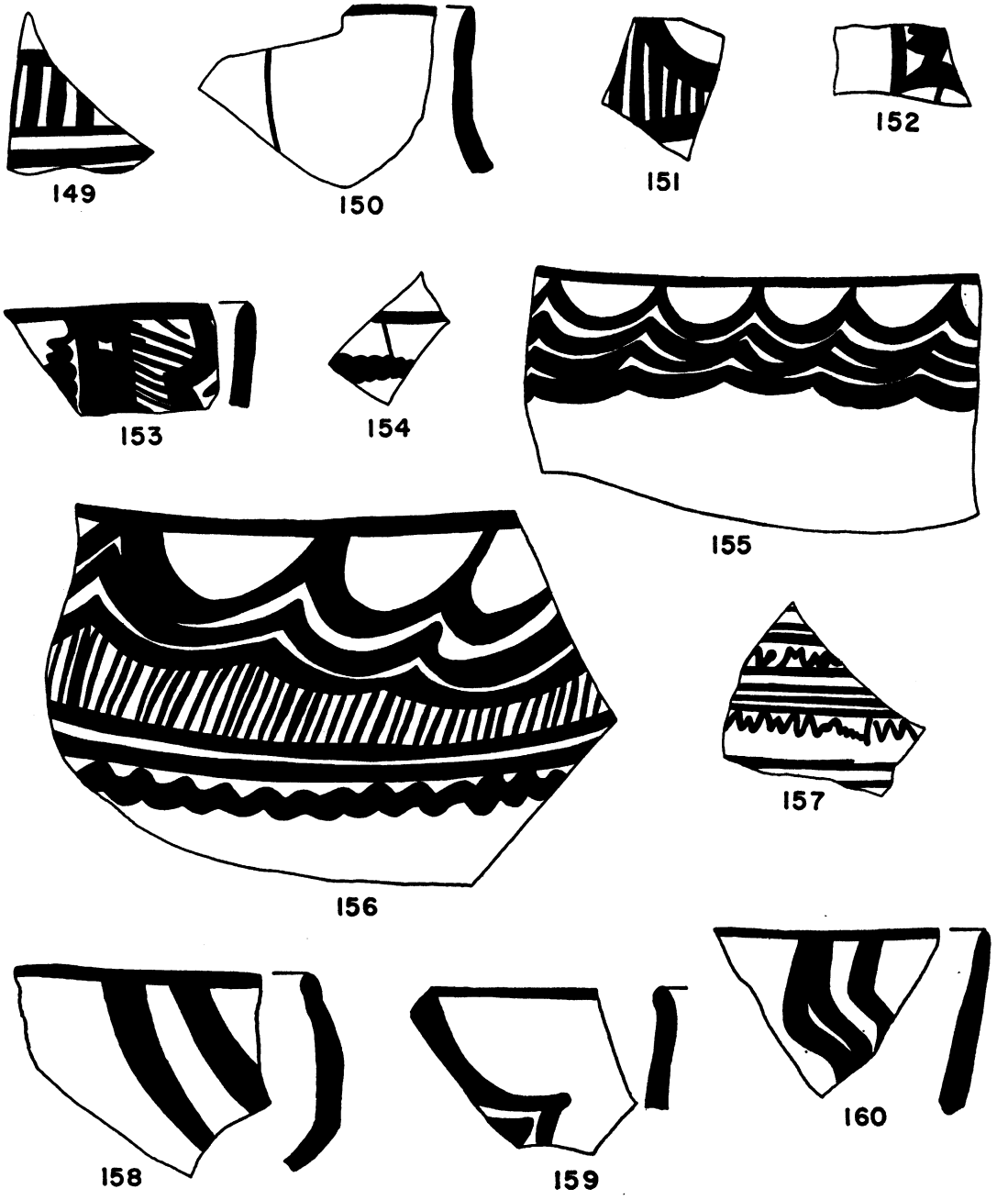
figurines[1] was found in the shrine complex (Fig. 5a). Because of this, I tend to agree with Piggott that these somewhat terrifying miniatures serve as "a grim embodiment of the mother-goddess who is also a guardian of the dead—an underworld deity concerned alike with the corpse and the seed-corn buried beneath the earth,"[2] which is not strange, since all major deities in the later Hindu pantheon had several opposing yet complementary attributes. For example, Maha-devi, the wife of Siva, has two major characteristics: "As the Sakti or energy

[1] Piggott, 1950, Fig. 16.

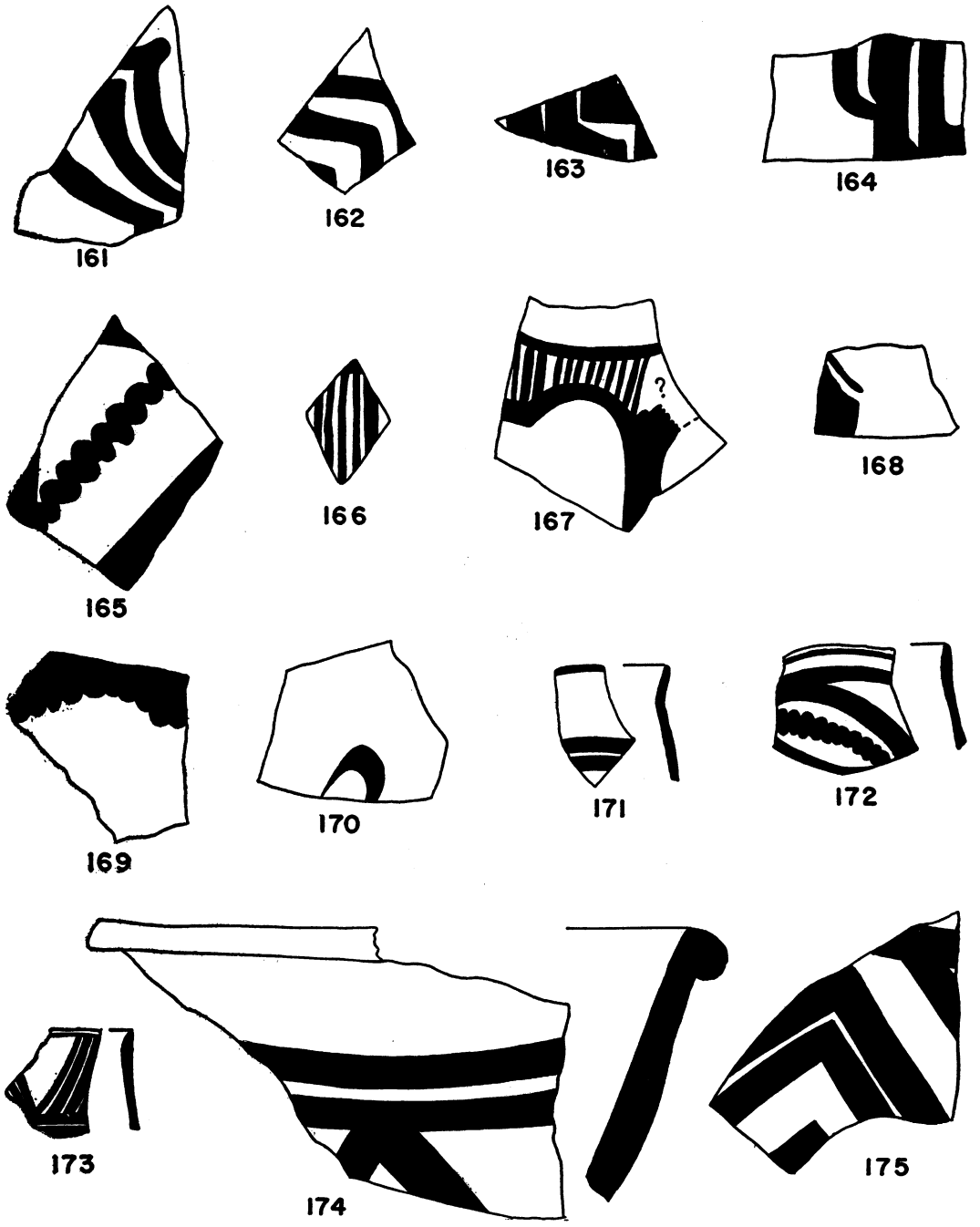
[2] Piggott, 1950, 127.



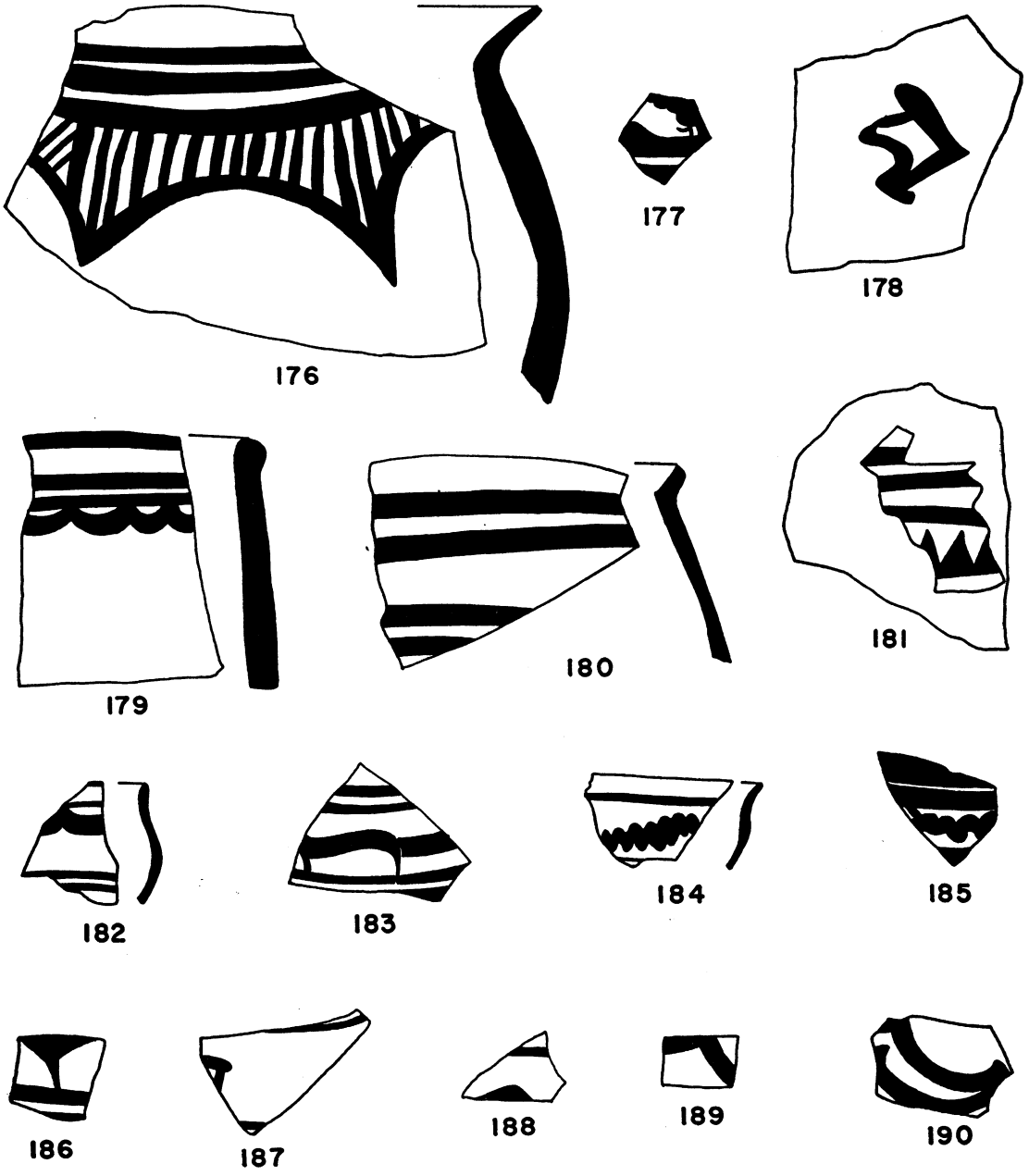
DESIGNS 136–139. Ware of "Quetta Type."
DESIGNS 140–148. Morasi Black-on-Buff Surface.



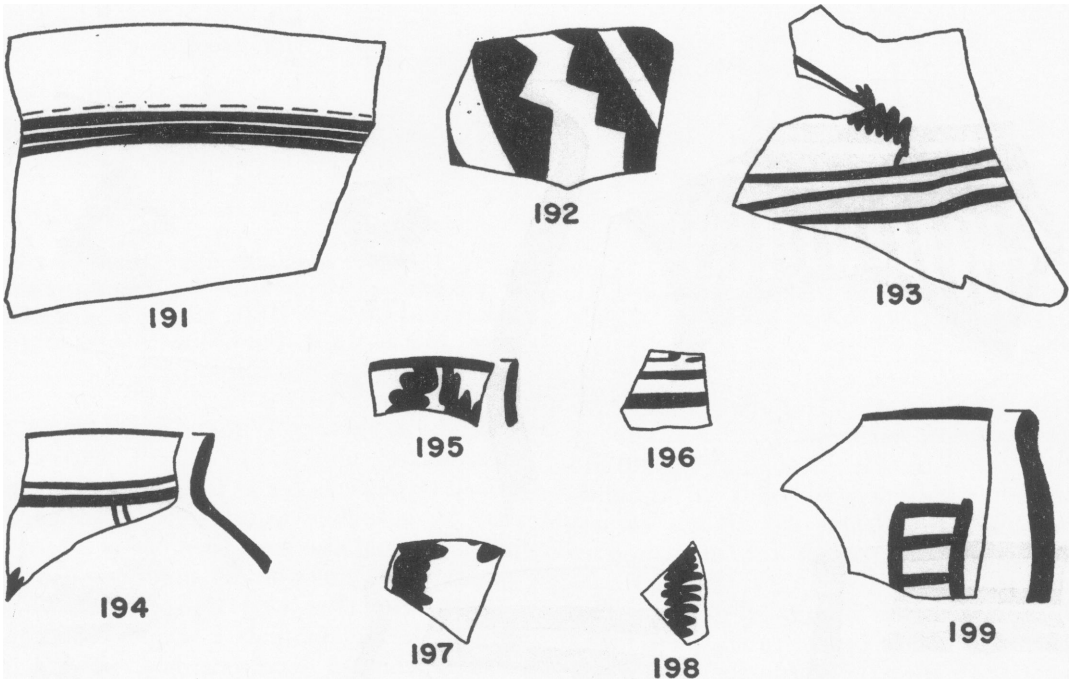
DESIGNS 149–154. Morasi Black-on-Buff Surface.
DESIGNS 155–160. Nurzai Black-on-Red Surface.



DESIGNS 161–175. Nurzai Black-on-Red Surface.



DESIGNS 176–178. Nurzai Black-on-Red Surface.
DESIGNS 179–187. Ware of "Quetta Type."
DESIGNS 188–189. Morasi Black-on-Buff Surface.
DESIGN 190. Nurzai Black-on-Red Surface.



DESIGNS 191–199. Nurzai Black-on-Red Surface.

of Siva she has two characters, one mild, the other fierce; and it is under the latter that she is usually worshipped. . . . In her milder forms she is *Umā*, 'light,' and a type of beauty . . . . As *Kālī*, 'the black,' she is represented with a black skin, a hideous and terrible countenance,

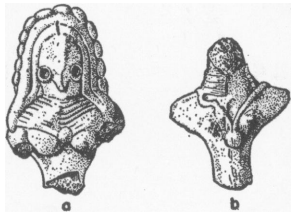


FIG. 8. Terra-cotta female figurines. a. Morasi IIa. b. Morasi IV. Approximately ×2/5.

dripping with blood, encircled with snakes, hung round with skulls and human heads, and in all respects resembling a fury rather than a goddess."[1]

Only the upper torso of the Morasi IIa female was found, and both arms were broken, Venus-like. The hair, represented in the usual elaborate hairdress, hangs evenly and naturally down both sides of the head and rests on the shoulders. An incision on the forehead was made with a sharp, wedge-shaped instrument; it had been daubed with red paint. Possibly other areas of the figurine had also been painted originally. Parallel multiple necklaces (or a pleated cape?) hang from the neck to below the nipples of the well-formed, sensuous breasts—a key motif in all later Hindu art styles. A round pendant or brooch nestles between the breasts. The nipples are apparently under the cape. Unlike most other Zhob examples, the figurine has a very slim waist. Goggle eyes and a parrot-like beak add horror to the beauty.

Is it possible that the Zhob figurines represent a primitive *Kālī?* Do the necklaces actually represent snakes around the neck? Is the round pendant a stylized skull? Is the red paint blood? I think answering such questions affirmatively is a feasible interpretation. Wavy appendages on one of the figures from the Damb Sadaat II very much resemble snakes.[2]

METAL OBJECTS

All metal objects found at Deh Morasi Ghundai are copper.

[1] Dowson, 1953, 86–87.

[2] Fairservis, 1956, Fig. 16b, 227.

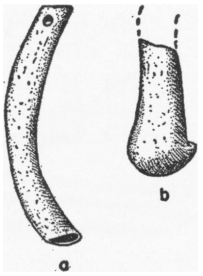


FIG. 9. a. Hollow copper drinking tube, Morasi IIa. b. Fragment of copper handle, Morasi IIa. Slightly less than 1/2.

UTILIZED MAGNETITE NODULE (FIG. 5B): An almost spherical magnetite nodule was found near the shrine complex. Secondary flaking and utilization scars are obvious. This unpretentious object represents one of the earliest archeological evidences of the utilization of natural iron.

HOLLOW COPPER TUBING (FIG. 9A): Two fragments of hollow copper tubing were found in association with the shrine complex. These fragments are possibly parts of a ritual drinking tube, like those depicted on seals found at Tepe Hissar and Tepe Gawra. (See p. 116 for further discussion.) Although slightly flattened, the tube had a diameter of about 0.5 cm.

COPPER HANDLE FRAGMENT (FIG. 9B): The handle fragment found in association with the shrine complex is probably from a libation cup.

STONE ARTIFACTS

SEAL (FIG. 10A): A compartmented seal of the type commonly associated with prehistoric peasant villages of the Iranian plateau and Baluchistan occurs in connection with the shrine complex. Note the appearance of the step motif, also found at Mundigak,[1] in the lower right corner of Fig. 10a which was drawn from a cast of a gray steatite seal.

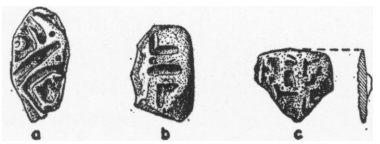


FIG. 10. Stone and metal seals. a. Fragment of grayish compartmented steatite seal, Morasi IIa. b. Fragment of cruciform grayish steatite seal, Morasi IIc. c. Copper compartmented seal, Morasi IV. ×2/5.

[1] Casal, 1961, Pl. 45A.

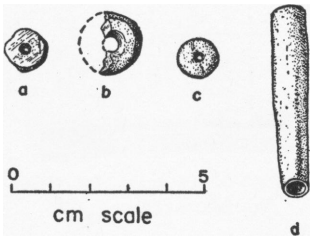


FIG. 11. Beads and a drinking tube. a. Clay bead or spindle whorl, Morasi IIc. b. Broken drill weight or spindle whorl, Morasi IIb. c. Steatite bead or spindle whorl, Morasi IIa. d. Terra-cotta drinking tube (?), Morasi IIc. ×1/2.

BEAD OR SPINDLE WHORL (FIG. 11C): A circular steatite object, 4 by 0.5 cm., with a hole drilled through its center for possible stringing, may be a spindle whorl, a bead, or gaming piece. It could also have been one of a series of graduated weights worn by an itinerant trader.[2]

STONE HOE (FIG. 12A): One of the most interesting Morasi IIa finds is a grooved, fiddle-shaped, chipped limestone hoe, now in the Kabul Museum. It is 18 cm. long and has a lozenge-shaped cross-section. The most closely similar hoes known to me came from Tepe Hissar, Mundigak, and Chung Tzu Yai.[3]

ALABASTER (FIG. 13): A small, finely executed, broken alabaster rim was found in the lowest levels of Morasi IIa. Moreover, half a small cup was found in association with the shrine complex. Another rim fragment from the uppermost levels of Morasi II, probably

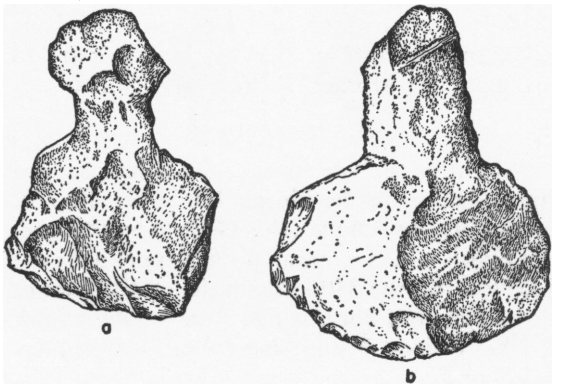


FIG. 12. Stone hoes. a. Morasi IIa. b. Morasi IIb. Approximately ×1/4.

[2] Casal, 1961, Fig. 133.
[3] Schmidt, 1937, 222, Pl. 64, H2596; Casal, 1961, Pl. 38A.

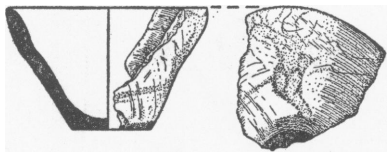


FIG. 13. Fragment of an alabaster cup, Morasi IIa. Approximately ×2/5.

from a large bowl, is now in the Kabul Museum.[1]

MISCELLANEOUS: The following are now in the Kabul Museum: one unmeasured limestone flake, probably used as a flesher, and two possible small mortars or boat-shaped lamps, about 8 by 3.5 cm.

HEARTH AREAS

The levels from 520 to 575 cm. are intensively flecked with charcoal and burned bone. The 575- and 580-cm. level is an almost solid level of charcoal concentration.

ANIMAL BONES

Two sheep or goat (?) mandibles in excellent condition were found in the 520–540-cm. levels. A goat (?) horn and scapula were found in association with the shrine complex. One small sheep or goat and one large (bovine?) mandible were found in the 520–540-cm. level. Small bone fragments occurred as deep as 600 cm.

MORASI IIB (280–420 CM.)

The major occupation levels at the site designated as Morasi IIb in the chronological sequence contain several tamped-earth floors, possibly three or four, and a portion of an unbaked brick wall (Fig. 3). A distinct floor at 420 cm. separates Morasi IIb from Morasi IIa.

ARCHITECTURE

Several important fragmentary architectural features occur in the Morasi IIb levels (Fig. 3).

MUD BRICK OVEN (PL. 17A): A mud brick oven with a semicircular profile appeared on a floor level in the 340–360-cm. level. Samples of both brick and floor, which were brought back to the United States, have been studied by paleobotanists at the Pennsylvania State University, the Smithsonian Institution, and also at Muslim University, Aligarh, India (see pp. 126–131).

[1] Also see Fairservis, 1956, 237, Fig. 34a–c, Damb Sadaat II; Casal, 1961, Pl. 38C.

The oven which began at a depth of 344 cm., 68 cm. from E–F, 5 cm. from A–B, consisted of 10 or 11 bricks, each measuring about 25 cm. by 20 cm. by 15 cm. A harder patch of blackened earth occurred in the center of the collapsed oven.

FLOOR: The floor area surrounding the oven had been baked to a brick-reddish color. As we cleared away the oven, the chaff-tempered, tamped-earth floor became more grayish. It had a pink center that rested on a gray-black area, generally similar in cross-section to the brick discussed under Morasi IIa. That is, the partly baked or parched floor was fractured at the center line of hardening. The usual cross-section, top to bottom, is: gray, pinkish, black, fracture line. The floor cross-section averaged 2 cm. to the gray-black core, often with another 2 or 3 cm. of relatively soft, tamped mud and chaff below this. Water in the soil softened this lower layer, so that it broke away from the black core when the bricks and floor were removed.

Another interesting feature of the 420-cm. floor is that it actually joins a sun-dried brick wall at the A–C line (Pl. 20; Fig. 3). The mud floor joint curves up to meet the wall.

WALL (PL. 20; FIG. 3): The only wall section found at Morasi occurred from 345 to 420 cm. (see discussion of floor, above). It consisted of unbaked mud bricks about the same size as the oven bricks. The section of the wall near C had slipped, possibly as the result of erosion or a slight earthquake.

The other major floor level of tamped mud and chaff occurred above the oven at the 340–360-cm. level. Its characteristics were the same as those of the underlying floor.

UNDECORATED POTTERY

Fewer sherds were found in the Morasi IIb levels than in the Morasi IIa levels (Table 3).

PANJWAI CREAM SURFACE WARE

Plate 21c; Figure 14

The profiles of this ware were generally the same as those from Morasi IIa; a gradual evolution in ceramic shapes is hinted. The three possibly goblet bases (Fig. 14a–c) appear to be more balloon-like than those from Morasi IIa; Fig. 14a has a unique flat foot. All the larger bowl or jar bases are flat and suggest a

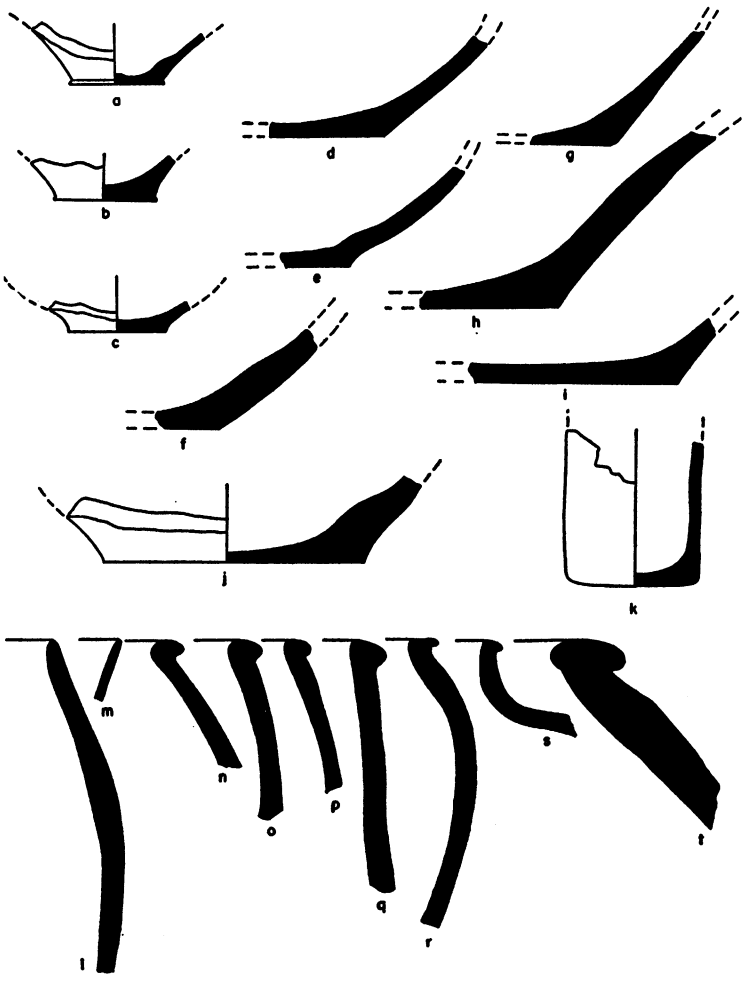


FIG. 14. Pottery profiles, Panjwai Cream Surface ware, Morasi IIb. ×2/5.

globular (Fig. 14d–f), wide-mouthed (Fig. 14g–i), or balloon-shaped (Fig. 14j) vessel.

A fragment of a hollow stand (Fig. 14k), unique at this site, was uncovered. It is neither footed like those of the classic Quetta ware[1] nor like stands reported from Mundigak, Hissar, several Baluchistan sites, and Indus Valley sites.

Straight rims were not very popular (Fig. 14 l–m), but club (Fig. 14n) or thickened (Fig. 14o–p) rims with possibly ovoid profiles were in vogue, numerically speaking, in this period. Other rim types range from thickened rims with an almost straight profile (Fig. 14q), a small jar profile (Fig. 14r), a flanged rim with flaring neck and wide shoulder (Fig. 14s), to a clubbed rim with no neck, probably from a wide-mouthed storage jar (Fig. 14t).

[1] Fairservis, 1956, 254–255.

MAIWAND RED SURFACE WARE

Plate 21g; Figure 15

Several sherds contained a slight, haphazard, outer surface burnish, probably unintentional. No large sherds had over-all or patterned burnished designs. Erratic inside and outside rag (?) streaks are common. Exposed limestone nodules are in every case less than 0.1 cm. in diameter. It was possible to reconstruct only a few base and rim profiles: a fine goblet base (Fig. 15a) and a flat base of a vase or thin jar with a possibly ovoid profile (Fig. 15b). Other flat-based sherds probably represented wide-mouthed bowls (Fig. 15c–f). The single rim

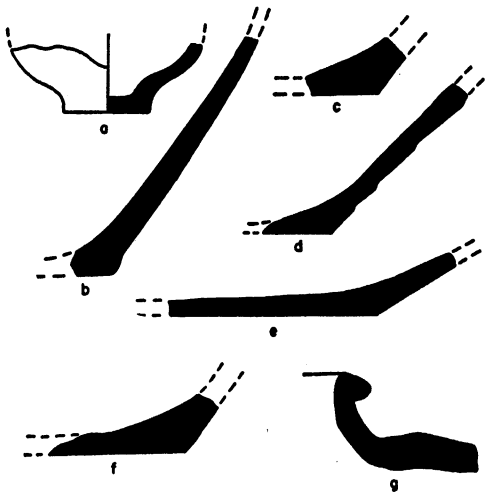


FIG. 15. Pottery profiles, Maiwand Red Surface ware, Morasi IIb. ×2/5.

sherd (Fig. 15g) is flat, with the flaring neck and wide shoulder of a globular or almost round jar.

KANDAHAR COARSE WARE

Plate 23g

A few isolated sherds of this ware appear in Morasi IIb.

BADWAN BUFF SURFACE WARE

Two Variant 2 sherds were found at the bottom of Morasi IIb.

PAINTED POTTERY

WARE OF "QUETTA TYPE"

Designs 60–79

More sherds of the ware of "Quetta Type" appear in Morasi IIb.

SCALLOPS (DESIGN 60): This design is identical to all the Morasi scallop designs.

HORIZONTALS (DESIGNS 61–64): Multiple horizontal lines of varying thicknesses again occur separately, serve as platforms, or enclose other motifs. One sherd has several short unconnected lines pendent from a solid horizontal (64).

STEP (DESIGNS 65–68): The repeated step or zigzag (65) is a popular Quetta ware motif. Loosely drawn zigzags (66) are similar to some shown in Fairservis [1956 (253), 293]. Zigzags enclosing a short wavy line are also common (67). Straight diagonal lines (68) fill the body of many zigzag designs.

DIAGONALS (DESIGN 69): Design 69 is almost identical with one shown in Fairservis [1956 (243), 248].

GRID DESIGNS (DESIGN 70): The one good gridwork sherd shows the top of a negative terrace [W.A.F., 1956 (262), 293].

TRIANGLES, RECTANGLES FILLED WITH MULTIPLE LINES (DESIGNS 71–75): Repeated triangles near the rim are common, either side by side (71) or opposing (72–73). Vertical parallel lines are in many cases enclosed by two horizontal lines (74–75).

FAUNA AND FLORA (DESIGNS 76–78): Design 76 is possibly a fragment of an animal body, a typical Kulli motif [W.A.F., 1956 (432), 308].[1] A fragment of a design that is possibly a bird wing (77) was found. This motif also occurs at Susa, Hissar, Sialk, and on a Morasi Black-on-Buff Surface sherd. Design 78 resembles, at least superficially, Design 426 in Fairservis (1956, 307) and is possibly vegetation.

MISCELLANEOUS (DESIGN 79): On a broken-rimmed sherd a short, thick, vertical line hung from a horizontal line, somewhat similar to Design 64.

MORASI BLACK-ON-BUFF SURFACE WARE

Designs 80–97

Again, these motifs all occur on the *inner surface* of the sherds.

LOOPS, FESTOONS (DESIGNS 80–82): These are essentially the same types of designs as those found in Morasi IIa. Stylistic variations, however, are obvious in Design 80 (regular unilinearity of the loops), Design 81 (multiple design), and Design 83 (bold, vigorous, but even, strokes).

HORIZONTALS: These are commonly used to enclose or serve as a base for other designs, e.g., Design 80.

STEP (DESIGNS 84–89): The most common consists of two or more diagonal zigzag lines beside three straight diagonal lines (84); these designs extend to the base of the vessel on the interior. Several profiles suggest small, jar-like beakers. Similar designs were found by Casal at Mundigak.

Other zigzag designs are reminiscent of the Quetta ware illustrated by Fairservis in 1956. Design 85 is similar to his Designs 205 and 222,

[1] See also Casal, 1955, Fig. 20.

and Design 86 is like his Design 195. The freely drawn Design 87 resembles Fairservis' Designs 230 and 252. Two designs (88–89, the present paper) are drawn in a reddish paint, the color probably being the result of firing.

DIAGONALS (DESIGN 90): One sherd had straight-line diagonals above multiple, horizontal, straight lines.

TRIANGLES, RECTANGLES FILLED WITH MULTIPLE LINES (DESIGNS 91–95): Straight horizontal or wavy lines are the elements of these curvilinear triangles and rectangles.

LADDER (DESIGN 96): This motif is like one in Fairservis [1956 (468), 311].

FAUNA (DESIGN 97): Design 97 is a fragment of what is possibly a bird wing like fragments found at Susa I?[1] and Tall-i-Bakun A.[2] This is also a Quetta ware design.[3]

NURZAI BLACK-ON-RED SURFACE WARE

Designs 98–115

More sherds of this ware have exterior designs than do those of Morasi IIa. I discuss the interior designs first.

LOOPS, VOLUTES (DESIGN 98): This design is similar to others found in Morasi IIa and IIc.

STEP (DESIGNS 99–102): The basic step or zigzag motif continues to be the most popular. It varies in paint thickness and fluidity of treatment, but in most cases three zigzag lines, drawn freely, occur together. Beaker types (100–102) and a rather large type of open bowl appear (99). The lines in all cases reach from lip to base on the inner surface of the vessel.

DIAGONALS, WAVY LINES (DESIGNS 103–104): These motifs are similar to Quetta ware designs [W.A.F., 1956 (251–252), 293].

GRID WORK (DESIGN 105): An interesting base sherd has a series of probable repeated squares which diminish in size.

LOZENGE MOTIFS (DESIGNS 106–107): Four sherds had interesting motifs which extended from the top to the base of the vessel on the inner surface, a combination of united repeated lozenges enclosing a wavy line and step designs enclosing the wavy lines (106); also found at Giyan Vc,[4] and Sialk III.[5] Another repeated lozenge design encloses horizontal lines (107).

MISCELLANEOUS DESIGNS (DESIGNS 108–109): The designs on two sherds cannot be related to other designs discussed. The interesting lines on Design 108 have a rope-linked quality. Design 109 may represent part of a step or square design.

SHERDS WITH DESIGNS PAINTED ON OUTSIDE (DESIGNS 110–115): The diagonal step design (110) closely resembles one in Fairservis [1956 (250), 292].

Two thin-rimmed sherds (111–112) have horizontal lines: one has a thin line above a broad line (111); on the other, the broad and thin lines are reversed (112).

Repeated triangles or diamonds with a wavy line beneath (possibly only part of a complete design) were the most popular outer surface decoration (113).

Two sherds with tantalizing fragmentary motifs were found: Design 114 may have been part of a grid, saw-toothed pattern or terrace, both of which are very common Quetta ware motifs. On Design 115, the ends of painted lines offer nothing to help in an interpretation of their extension.

UNUSUAL POTTERY OBJECTS

LEG OF ANIMAL FIGURINE (FIG. 16): A fragment of a short, stubby leg of a terra-cotta animal figurine was found in the 400–420-cm. level. Its diameter at the point of fracture is 2 cm.

FIG. 16. Leg of terra-cotta animal figurine, Morasi IIb. ×3/4.

METAL OBJECTS

One fragment of a copper pin or wire, 9 cm. long by 0.3 cm. in diameter, was found in the 320–340-cm. level.

STONE ARTIFACTS

STONE HOE (FIG. 12B): A chipped and pecked limestone hoe, 20 cm. long, found in the 320–

[1] McCown, 1942.
[2] Langsdorff and McCown, 1942.
[3] Fairservis, 1956.
[4] Langsdorff and McCown, 1942, Pl. 30, Fig. 6.
[5] Ghirshman, 1938, Vol. 1, Pl. 77, Fig. B8.

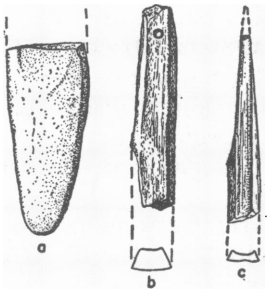


FIG. 17. Stone and bone artifacts. a. Broken celt. b. Bone pendant. c. Bone needle or awl. Approximately ×2/5.

340-cm. level, has a lozenge-shaped cross-section.

CELT (FIG. 17A): A broken celt was found in association with the stone hoe.

PESTLE: A pecked and chipped round pestle, 9 by 3 cm., lay near the hoe and celt.

SLING PROJECTILE: A round, highly polished pebble, 3.5 cm. in diameter, probably a sling projectile, was found in the vicinity of the hoe, celt, and pestle.

DIBBLE, DRILL WEIGHT, OR SPINDLE WHORL (FIG. 11B): A possible digging-stick weight was found in association with the objects described above. It is 6 by 3 cm. and has a truncated cross-section.

METATE?: A possible metate, 24 cm. long by 14 cm. wide by 14 cm. high, found along the A–B line, 319 cm. down and 310 cm. from A, has a smooth, concave upper surface. It is now in the Kabul Museum.

BONE ARTIFACTS

PENDANT (FIG. 17B): A polished stone pendant, 6.5 by 1.2 cm., occurred in the uppermost Morassi IIb level (290–300 cm.).

NEEDLE OR POINT (FIG. 17C): A bone needle or awl (7 cm. long) was found in the level below the pendant. The awl was broken or lost in transit from Afghanistan.

HEARTH AREAS

Beginning at 420 cm., Morasi IIb is separated from Morasi IIc by a level of fire-burned rocks and pebbles. All the Morasi IIb levels are much more distinctly reddish than the levels below them. It is quite possible that fire swept through at least part of the Morasi IIb settlement. Fire-burned stones, bones, and pottery were found near the rounded brick oven in the lower part of Morasi IIb levels (see p. 100).

ANIMAL BONES

Many long bones, both large (bovine?) and small (sheep or goat) are found in the upper levels of Morasi IIb, especially near the A–C line, but the number is considerably reduced below 360 cm. A horn of domestic goat (?) was also found.

MORASI IIc (100–280 CM.)

This is a sub-period represented by many successive floor levels.

ARCHITECTURE

No definable architectural features were uncovered, only floor levels and mound debris.

UNDECORATED POTTERY

PANJWAI CREAM SURFACE WARE

Plate 21b; Figure 18

As we approached the 1-meter level from below, we uncovered more and more sherds discolored by minerals in the soil.

More examples of Panjwai Cream Surface ware are attributable to Morasi IIc than to any other period (Table 3). The 260–280-cm. level contained the largest quantity of sherds, among which are several very fine goblet or vase profiles (Fig. 18a–g). The small-based type (Fig. 18a) seems to have been the most popular vessel. Flat-based bowls with flaring walls and wide mouths are common base types (Fig. 18h–p); bases are, in some examples, thinner than the adjacent walls (Fig. 18h). Other flat-based sherds represent ovoid or globular jar types (Fig. 18q–s).

The most common rim variant is a slightly rolled, thickened, or outturned rim with an ovoid or globular body profile (Fig. 18t–18z, 18a′–18c′), probably from goblets or small jar vessels. The wide-mouthed rim common in Morasi IIa and IIb is rare in Morasi IIc.

Also common is a series of flat, clubbed, flanged, or externally thickened rim profiles, with generally the same body profiles as above (Fig. 18d′–s′). A few rim sherds are externally thickened but have straight necks and straight and slightly flaring shoulders (Fig. 18t′–18u′).

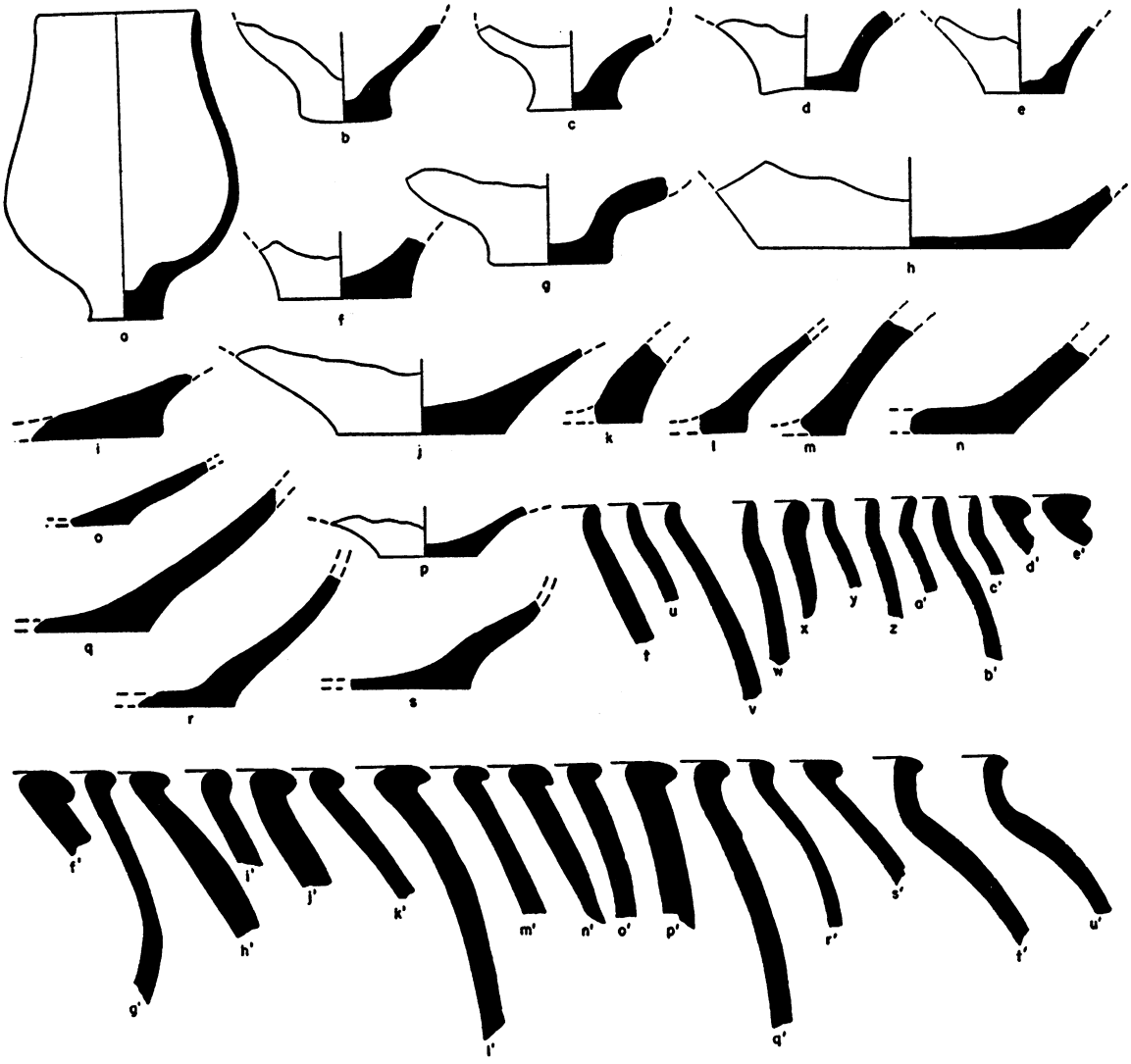


FIG. 18. Pottery profiles, Panjwai Cream Surface ware, Morasi IIb, Cut 4. Approxinately ×2/5.

MAIWAND RED SURFACE WARE

Plate 21f, h-i; Plate 23m; Figure 19

Maiwand Red Surface ware dies out almost completely above 140 cm. The most productive level is at the bottom of the stratum: the 400–420-cm. level. Occasionally a single thin, horizontal, channeled line decorated the upper half of the vessel walls. Several sherds bear signs of haphazard burnishing or low polish.

A number of base sherds suggest the globular profile (Fig. 19a–e) of either goblets or small jars. Other base sherds probably belonged to some type of wide-mouthed bowl like those shown in Fig. 19f–g. Rim profiles represent both wide-mouthed (Fig. 19h–j) and narrow-mouthed jars (Fig. 19k–n) or goblets (Fig. 19o–p).

BADWAN BUFF SURFACE WARE

Plate 21o–s; Figure 20

This rare ware continues its sporadic distribution; it occurs in the upper and lower levels of Morasi IIa and IIb.

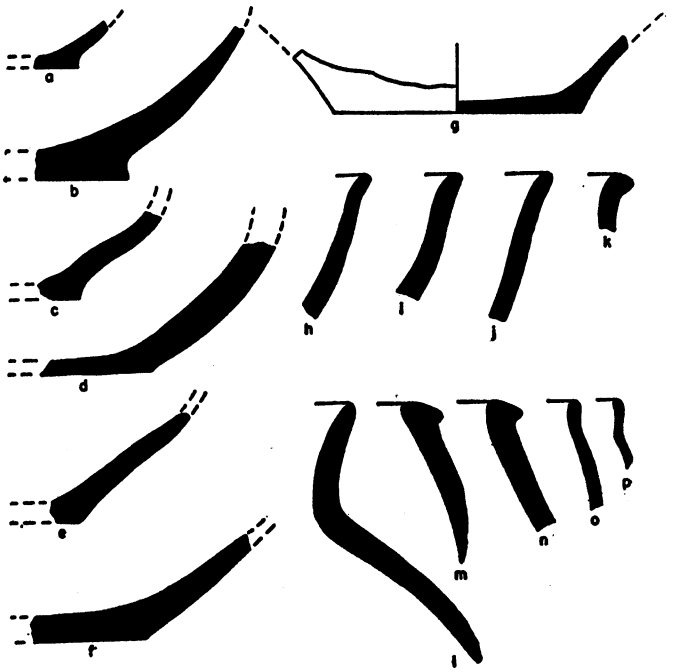


FIG. 19. Pottery profiles, Maiwand Red Surface ware, Morasi IIc, Cut 4. Approximately ×2/5.

Three fine goblet bases were recovered: a flat base with globular body (Fig. 20a), and thin pedestal stands or "champagne glass" stems (Fig. 20b–c), like those found at Mundigak[1] and several Iranian sites. No "champagne glass" bases have been found in the Quetta Valley.

KANDAHAR COARSE WARE

Plate 23e-f

The 11 sherds found in Morasi IIc are probably all from the same vessel; reconstruction, however, is not possible. The vessel, apparently over-fired, is buffy in color, rather than the usual red of sherds of the overlying Kandahar Coarse ware. Clay nodules appear in the temper.

PAINTED POTTERY

WARE OF "QUETTA TYPE"

Plate 22i; Designs 116–139

The frequency of sherds of ware of "Quetta Type" of the classic variety increases in Morasi IIc levels.

LOOPS, FESTOONS (DESIGN 116): There is a familiar loop design pendant from horizontal lines.

[1] Casal, 1955, Figs. 20–26.

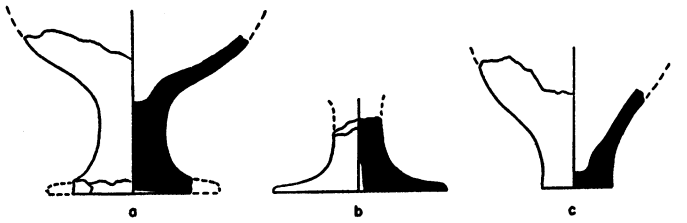


FIG. 20. Pottery profiles, Badwan Buff Surface ware, Morasi IIc, Cut 4. Approximately 2/5.

HORIZONTALS (DESIGNS 117–119): These are again a much-used motif, drawn either above other motifs (117) or as a means of isolating design units. On several sherds, wavy lines were drawn under straight horizontal lines (118–119).

STEP (DESIGNS 120–125): A classic, horizontal, zigzag, Quetta ware motif was found (120).[1] The most numerous designs, however, had an almost floral aspect.[2] Other sherd designs (122–125) are too fragmentary for certain identification. For a design similar to Design 125, a bottle neck?, see Fairservis [1956 (234), 291].

DIAGONALS AND VERTICAL LINES (DESIGNS 126–129): Diagonal lines (126) as components of designs are not emphasized in these cultural levels. Several interesting vertical line designs occur: 127, which resembles classic Kulli designs[3]; long thin lines resting (?) on two horizontal lines (128); and lines separated by a series of horizontal lines (129).

GRID (DESIGN 130): A single design, possibly a grid, may have been circular, but the sherd was too small to permit complete reconstruction.

DOT (DESIGN 131): A sherd fragment with a dot inside a probable negative polygonal form was found [W.A.F., 1956 (356), 301].

TRIANGLES, DIAMONDS (DESIGNS 132–133): Repeated triangles, diamonds (132), and other plane geometric figures (133) invariably enclose a series of parallel, horizontal, vertical, or diagonal lines, but do not approach the complexity of the Quetta ware designs [W.A.F., 1956 (325–327), 299].

LADDERS (DESIGN 134): Several sherds had interesting pairs of parallel straight lines that enclosed opposing diagonals [W.A.F., 1956 (525), 315].

FLORA (DESIGN 135): A fragmentary pipal leaf motif appeared in Morasi IIb [W.A.F., 1956 (418), 306].

MISCELLANEOUS (DESIGNS 136–139): A unique sherd had the terminal line of an unidentifiable motif (136). Three sherds (137–139) had designs in reddish paint, probably the result of differential firing. Design 139 slightly resembles W.A.F., 1956 (569), 319.

[1] Fairservis, 1956 (215), 290, and Fig. 49, 255; Casal, 1955, Fig. 18.
[2] Fairservis, 1956 (186–194), 287–288.
[3] Casal, 1955, Fig. 27.

MORASI BLACK-ON-BUFF SURFACE WARE

Designs 140–154

The key design motif (23 sherds) in the Morasi IIc levels is the step or zigzag; 14 of the 23 sherds came from the 260–290-cm. level, a fire-burned transitional zone. All these Morasi Black-on-Buff Surface designs are painted on the inner surface of the vessels. Very little of the classic Quetta ware pottery had designs painted on the inner surface.

LOOPS (DESIGN 140): On one sherd two loops enclosing short, wavy, horizontal lines were suspended from a painted rim.

HORIZONTALS (DESIGNS 141, 146): On several sherds straight horizontal lines serve to delimit designs.

STEP (DESIGNS 142–148): Simple zigzag motifs (142–145) are popular, but two diagonal zigzag lines drawn beside three straight lines occur. Some are freely drawn repeated triangles, with diagonal straight lines to complicate the design (146–148).

VERTICAL LINES (DESIGNS 149–150): Vertical line motifs are generally alternated with repeated horizontal line patterns (149), but one sherd has a unique single line design (150).

TRIANGLES (DESIGN 151): This type of motif enclosing vertical lines may represent stylized animal bodies, but it was impossible to reconstruct enough of the design to make such an identification with assurance.

FLORAL? (DESIGN 152): A possibly floral design (tree?) was found in a Morasi IIb level.

MISCELLANEOUS (DESIGNS 153–154): One sherd has several designs, freely drawn in a vigorous, individualistic style with little regard for form or substance (153); another fragmentary design consists of a wavy line that parallels a thin straight line, with a thin diagonal connecting line (154).

NURZAI BLACK-ON-RED SURFACE WARE

Designs 155–178

Again, the bulk of the designs are painted on the inner surfaces of the vessels.

INNER SURFACE DESIGNS, LOOPS (DESIGNS 155–156): Two types of loop designs were found; both occurred on bowl types with similar profiles. On one, repeated loops are suspended from a painted rim (155). The bulk of these designs are reddish in color; however, complex motifs on Design 156 are definitely

black. On this vessel vertical lines are placed between the bottom loop and two horizontal lines, with an additional wavy line beneath the horizontals.

HORIZONTALS (DESIGN 157): As usual, the multiple horizontal line design is one of the more popular motifs. One unique sherd has erratic wavy lines between horizontals.

STEP (DESIGNS 158–165): The stepped zigzag is still the most popular painted motif. Designs 158–162 illustrate common variations. All the stepped designs found at Deh Morasi Ghundai are more freely executed than those of the classic Quetta ware.

Three designs (163–165) are similar to Quetta ware motifs, although we must remember Quetta ware designs are primarily painted in black on a buff surface. Design 163 is negative [W.A.F., 1956 (204), 289, and (477) 311]; Faiz Mohammed, a black-on-gray ware. Design 164 is angular [see W.A.F., 1956 (188b), 287]. Design 165 consists of a wavy diagonal line [W.A.F., 1956 (252), 293].

VERTICAL LINES (DESIGN 166): Simple, isolated, vertical lines occur infrequently.

TRIANGLES (DESIGN 167): Vertical lines usually occur in connection with simple or modified geometric designs that suggest animal forms.

MISCELLANEOUS (DESIGNS 168–170): Several sherds had unusual or fragmentary undecipherable motifs. Design 169 is similar to Design 519 in Fairservis (1956, 315, Black-on-Red Slip, Quetta ware associated).

EXTERIOR DESIGNS, HORIZONTALS (DESIGN 171): All 11 sherds in this category had painted horizontal lines. A thin sherd with two horizontal parallel lines on the outer surface was found.

DIAGONALS (DESIGNS 172–175): The wavy diagonal (172) is almost identical to the Quetta motif [W.A.F., 1956 (150), 284]. Intersecting diagonals (173) [compare W.A.F., 1956 (243), 292] still occur. A large vessel (174–175) with repeated chevrons was represented by four sherds.

VERTICAL LINES (DESIGN 176): A large jar had shoulder designs that consist of vertical and diagonal lines inside modified, repeated triangles; two horizontal lines occur above the motif.

MISCELLANEOUS (DESIGNS 177–178): On a unique sherd (177) a fragmentary motif probably represented a floral design, but no more specific interpretation is possible. Design 178, unique and intriguing, may represent a potter's mark.

UNUSUAL POTTERY OBJECTS

LEG OF TERRA-COTTA HUMAN FIGURINE: A fragment of a leg of a human figurine (Fig. 21a), found in the 100–120-cm. level, is identical to several Quetta specimens, presumably from Damb Sadaat III.[1] The leg probably fitted a Zhob Valley type of female figurine.

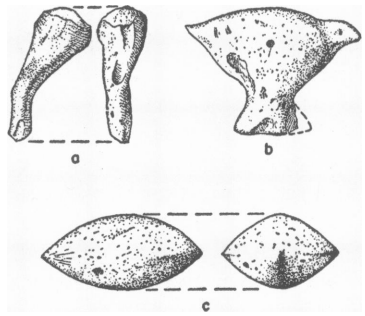


FIG. 21. Terra-cotta objects, Morasi IIc, Cut 4. a. Leg from human figurine. b. Bird figurine (cast). c. Sling missile (cast). ×2/5.

BIRD FIGURINE (FIG. 21B): A bird figurine, with a pedestal stand, probably a toy, was found in the 180–200-cm. level, in association with several fine goblets. Similar but not identical fragments were found in Dam Sadaat II and III levels[2] (see also p. 117).

CLAY SLING MISSILE OR "PLUMB BOB" (FIG. 21C): A "plumb-bob"-shaped clay pellet found in the 140–160-cm. level is unique. It may be a sling pellet or the body of an unfinished bird figurine.

BEAD OR SPINDLE WHORL(?) (FIG. 11A): The 120–140-cm. level yielded a roughly circular Maiwand Red pottery bead or spindle whorl, 4 cm. wide by 0.5 cm. thick.

HOLLOW, TERRA-COTTA, TUBULAR FRAGMENT (FIG. 11D): This fragment, possibly part of a drinking tube or whistle, was found in the 240–260-cm. level.

DISCS: Three pottery discs were found in the Morasi IIc levels. None was perforated. They

[1] Fairservis, 1956, 225, Fig. 17.

[2] Fairservis, 1956, 228. Fig. 20c–e; see Casal, 1961, Pl. 37B.

were possibly used as weights or bottle stoppers. None was large enough to be a toilet "cake."[1] They are: (1) 120–140-cm. level, Panjwai Cream Surface, 2.6 by 2.2 by 0.8 cm.; (2) 140–160-cm. level, Panjwai Cream Surface, 2.5 by 2.2 by 0.8 cm.; (3) 220–240-cm. level, Panjwai Cream Surface, 2.5 by 2.3 by 0.7 cm.

UNUSUAL SHERD (DESIGN 178): A script-like symbol or motif found on a sherd from the 160–180-cm. level is unique.

METAL ARTIFACTS

PIN OR "WIRE" FRAGMENTS (FIG. 22): Five fragments of copper "wire" of varying short

FIG. 22. Copper pin, Morasi IIc, Cut 4. ×3/4.

lengths, found at 263 cm., are now in the Kabul Museum. The copper pin illustrated is bent, probably accidentally, and is 12 cm. long unstraightened and 0.3 cm. in diameter.

STONE ARTIFACTS

SEAL FRAGMENT (FIG. 10B): The steatite seal fragment from the 140–160-cm. level has a simple, compartmented, cross motif, very similar to the stone seals found at Mundigak[2] (see p. 99).

CELTS: Two celts were found and are now in the Kabul Museum: (1) 169 cm.; 2 meters from D, 45 cm. from C–D; (2) 260–280-cm. level; slightly grooved.

ALABASTER FRAGMENT: A fragment of a small alabaster bowl was found at a depth of 176 cm. near A. It is very similar to that found in Morasi IIa.

BONE ARTIFACTS

UTILIZED BONE: Several long bones show signs of utilization, probably as scrapers. They occur in the following levels: 120–140 cm. (probably an awl or needle, like that found in Morasi IIb); 140–160 cm.; 160–180 cm.; 240–260 cm.

MISCELLANEOUS: A round, fire-burned bead (possibly faience), not illustrated, was found in Morasi IIb. It is now in the Kabul Museum.

HEARTH AREAS

The lowest hearth in Morasi IIb occurred from 245 to 260 (15 cm. thick) cm. down, 65 cm. from A–B, 2 meters from A–C. The size of the hearth was 60 cm. by 120 cm. The surrounding earth was reddened, and the hearth rested directly on a tamped-earth floor. Fire-burned stone and bone were present. The stones circled the hearth. A layer of fire-burned pebbles lay below the hearth.

Another hearth (172 to 187 cm.), 15 cm. thick, with a diameter of 30 cm., was associated with a tamped-earth floor level, 1 meter from A–C. This hearth was also surrounded by fire-burned stones.

A similar hearth, 25 cm. thick, occurred at 160 cm., 1 meter from D, 20 cm. from C–D. A second and smaller hearth in this level was 1 meter from A–C, just above the 172–187-cm. hearth.

A small lens of charcoal occurred at 120 cm.

ANIMAL BONES

The bulk of the usual type of animal bones gradually increases from 100 cm. to 180 cm., with many bones and teeth, some burned, in the vicinity of Skeleton 4.

Bone again occurs in bulk below 200 cm., including much of sheep or goat, one small

[1] Wheeler, 1953, 69–70.

[2] Casal, 1955, Fig. 3; 1961, Pl. 45A.

mandible (200–220 cm.), and many large ungulate bones (240–260 cm.).

Human Bone

Skeleton 4, found in Morasi IIc level, is probably intrusive from Morasi III (see pp. 112–113).

MORASI III (60–100 CM.)

Above 60 cm., where the first *baked* bricks appear below a floor of fire-burned pebbles, the cultural material has been mixed by wind, water, and man.

Architecture (Brick-lined Grave)

The brick-lined grave was the only architectural vestige uncovered, except for the floor level of fire-burned pebbles. The grave and its skeletal remains, the key cultural feature of Morasi III, are discussed below (pp. 112–113).

Undecorated Pottery

The bulk of the undecorated pottery in Morasi III levels is represented by Panjwai Cream Surface ware, the most common ware throughout Cut 4. Redware sherds were virtually absent; the few sherds uncovered in the 40–60-cm. level are generally too badly weathered for identification. No Badwan Buff sherds occur in these levels. A new ware, Pushmul Red Slip, appears.

PANJWAI CREAM SURFACE WARE

Figure 23

No goblet shapes were found in Morasi III, but large flaring bowls with wide mouths are popular (Fig. 23a). Several bases suggested globular profiles (Fig. 23b–c). A unique sherd had a ring foot (Fig. 23d), the only one found at Deh Morasi Ghundai. The rims favored narrow-mouthed, flat (Fig. 23e–h), beaded (Fig. 23i–j), and thickened or flanged (Fig. 23k–m) globular shapes. One rim (Fig. 23n) was externally thinned; another was straight and slightly beaded (Fig. 23o).

MAIWAND RED SURFACE WARE

Figure 24

A few base (Fig. 24a–b) and rim sherds were uncovered, all indicating generally globular, narrow-mouthed jars, including several thin, slightly flaring rims (Fig. 24c–d), as well as a few with flanged rims (Fig. 24e–f).

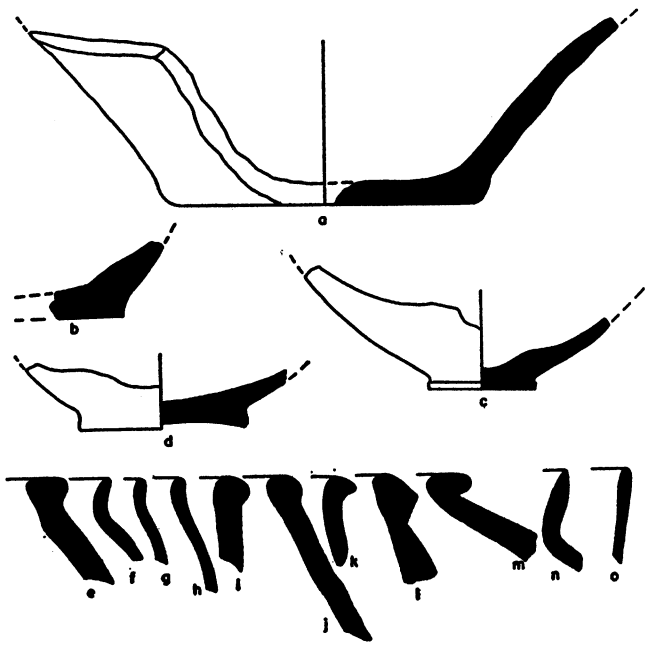


Fig. 23. Pottery profiles, Panjwai Cream Surface ware, Morasi III, Cut 4. ×2/5.

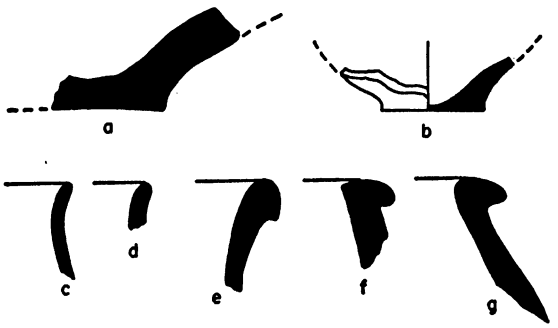


FIG. 24. Pottery profiles, Maiwand Red Surface ware, Morasi III, Cut 4. ×1/2.

PUSHMUL RED SLIP WARE

Figure 25

The characteristics of this in-and-out red slip ware are discussed on pages 77 to 78. The type seems to compare with the later red-orange wares that occur in Mundigak VII.[1] Superficially, the ware resembles a pseudo-Arretine ware, like that found at Arikamedu and other Indian sites.[2] Profiles (Fig. 25a–c) indicate sophisticated, well-made low bowls or plates, with flat, externally thickened rims and flat bases. Black lines decorate the flat surfaces of several rims.

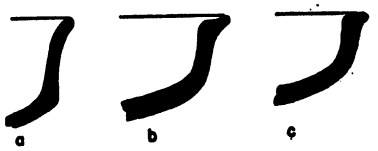


FIG. 25. Pottery profiles, Pushmul Red Slipped ware, Morasi III, Cut 4. Approximately ×2/5.

PAINTED POTTERY

Above the human skeletons (above 50 cm.) Morasi III is a disturbed area. Little pottery was found, and much of it was too weathered for proper classification.

WARE OF "QUETTA TYPE"

Designs 179–187

Of the 13 decorated black-on-buff sherds found in Morasi III, 11 have exterior designs.

LOOPS (DESIGN 179): Several rim sherds had loops hanging from two lower horizontal lines [W.A.F., 1956 (111), 281].

HORIZONTALS (DESIGNS 180–181): All the black-on-buff painted sherds in Morasi III had horizontal lines in a variety of combinations. Two types, unusual for "Quetta Type," were a thin-walled jar (180) with repeated pairs of horizontals [W.A.F., 1956 (141), 283], and a fire-burned sherd with a true slip, part of the design still clinging to the slip (181), saw-toothed under horizontals.

STEP (DESIGNS 182–183): No step designs were recovered, only modified undulating zigzags between horizontals.

DIAGONALS (DESIGNS 184–185): Shallow, wavy-line diagonals on thin sherds occurred in Morasi III [W.A.F., 1956 (177), 286].

MISCELLANEOUS (DESIGNS 186–187): Two fragmentary and unidentifiable designs were found.

MORASI BLACK-ON-BUFF SURFACE WARE

Designs 188–189

Only two indeterminate sherds of this type were uncovered, both in the lower levels of Morasi III (Designs 188–189).

NURZAI BLACK-ON-RED SURFACE WARE

Designs 190–199

This painted ware greatly outnumbers both the wares of "Quetta Type" and the Maiwand Black-on-Buff, with major concentrations in the lower Morasi III levels, and, for the first time, exterior designs outnumber interior designs.

INSIDE DESIGNS, LOOPS (DESIGN 190): One sherd had fragmentary loop designs.

HORIZONTALS (DESIGN 191): Six sherds had horizontal line designs. A new rim profile (191) appears; a shallow bowl or plate has three parallel lines around the outer edge of the inside of the base and a black line on the outside of the lip.

STEP (DESIGN 192): A negative-like zigzag motif was discovered [W.A.F., 1956 (195), 288].

OUTSIDE DESIGNS, STEP (DESIGNS 193–198): The step designs (193–195) consist of simple, diagonal, wavy lines on very thin sherds [W.A.F., 1956 (177), 288, and (516), 315]. Part of an angular zigzag design (196) occurred on one sherd [W.A.F., 1956 (191), 288]. Two sherds (197–198) have approximately vertical

[1] Casal, 1961, 163.
[2] Wheeler, Ghosh, and Deva, 1946.

wavy lines [see W.A.F., 1956 (232), 291].

LADDER (DESIGN 199): On a sherd with a painted red rim the beginnings of an outside, curvilinear, ladder motif are visible.

MISCELLANEOUS: A few animal bones, and nothing else of importance, turned up in the Morasi III levels.

HUMAN REMAINS

Unfortunately, it was impossible to rescue any of the human skeleton material found in Burials 1, 2, and 3 from the local *mullahs* (Muslim holy men). Throughout the excavation (until a local sub-governor ordered them to stop), the *mullahs* insisted that we were desecrating Muslim graves and told all who would listen that we infidels planned to ship Muslim dead back to America. Once their speeches convinced our laborers and they stopped work, but, with a little persuasion and money, their scruples were easily conquered. But in the end the *mullahs* won the battle. After Burials 1 and 2 had been carefully exposed and partly photographed and sketched, and the bones covered with protective shellac, they disappeared the night before we planned to remove them, in spite of our guard's insistence that he had seen no one in the area. The *mullahs* later admitted they had taken the skeletons and buried them in the nearby flood plain, but would not reveal the exact spot. Burial 3 was appropriated in broad daylight, an event duly recorded on movie film. I decided not to press our luck too far. Therefore, the following information is taken from our incomplete notes, sketches, and photographs.

BURIAL 1

Plates 15b, 16a; Figure 26

Skeletal remains of a child occurred under the fire-burned pebble floor along the A–B line in the side of Cut 4. No sign of any recent intrusion was observable. The skull, which appeared first, was found 90 cm. from the rest of the skeleton at a depth of about 70 cm. The rest of the skeleton lay between 68 and 78 cm. The skeleton was oriented in a north-south line in a semiflexed position, tilted slightly to the left; the skull faced the west.

I did not have an opportunity to study the upper cervical vertebrae before the *mullahs* reburied the skeleton, so the cause of decapitation remains undetermined. Although part of the lower rib cage was also missing, nothing else was disarticulated. Animals are seldom so discriminating in their taste for human flesh and viscera.

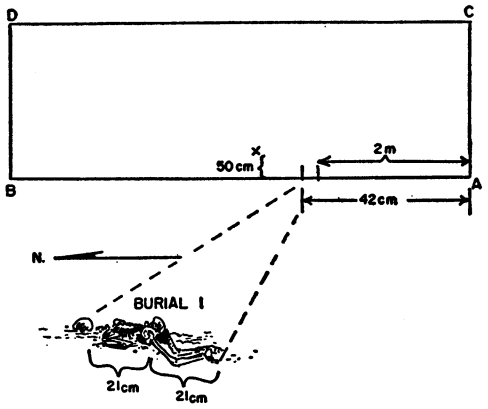


FIG. 26. Burial 1, Morasi III, Cut 4.

BURIAL 2

A disarticulated skeleton with bones scattered, probably by a wild animal, appeared along and near the C–D line about 1 meter from D at a depth of 80–100 cm. Any original orientation was destroyed under such conditions. This may possibly have been an intrusive Muslim burial; the soil was greatly disturbed near the grave.

BURIAL 3

Plates 15b, 16b; Figure 27

The first bricks in this burial complex showed up below 60 cm., just below the fire-burned, pebble floor. The burial also cut through a tamped-earth floor level at 80 cm. The bricks were stolen by the villagers the night they reburied the skeletons from Burials 1 and 2, probably because prehistoric baked bricks still make excellent building materials for modern huts.

Thirty-one tilted bricks were found in a general northeast-southwest orientation; many had been broken in half. Apparently these tilted bricks had rested upright on nine others that originally lay horizontally in the ground but had shifted later. The Kandahar region is subjected to occasional earthquake shocks. The unbroken, almost square, mud bricks (possibly low-fired) were 30 by 28 by 7–8 cm.

The skeleton, later stolen and reburied by the local population, was fully extended, dorsal,

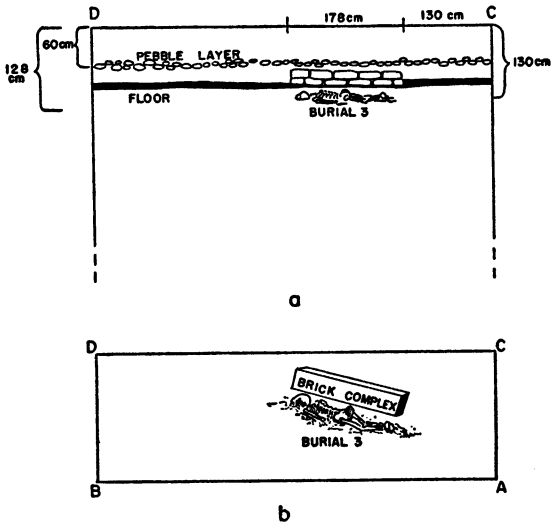


FIG. 27. Burial 3, Morasi III, Cut 4. a. Horizontal view. b. Vertical view.

oriented in a general northeast-northwest line, but slightly tilted to the west, possibly for the same reasons as the shift in the bricks.

An almost identical grave, lined with mud bricks and containing a flexed skeleton, was reported from Tepe Gawra, Locus 7–30, Stratum XI-A.[1]

Quantities of burned animal bone occurred in the general vicinity of the grave, together with broken pottery, but no real evidence of grave furniture was uncovered.

MORASI IV (MIXED UPPER LEVELS, 0–60 CM.)

Nature and man have combined to confuse the upper 60 cm. of this level. Despite this confusion, several extremely important finds occurred in addition to the usual undecorated sherds and some Morasi IIc and III Black-on-Buff painted sherds.

Several new important wares appear: Karim Cream Surface ware, Early Islamic Glaze sherds, and two fragments of what appear to be a "Rouletted" black ware. Pushmul Red ware, which first appeared in Morasi III, continues.

IMPORTANT FINDS

KARIM CREAM SURFACE WARE

Figure 28

This ware occurs almost exclusively in the Morasi IV levels and may be only a variation of the Panjwai Cream Surface ware, but its unique surface striations justify placing it in a separate category. Two rims were found: very thin and slightly flaring (Fig. 28a), and clubbed, internally and externally thickened (Fig. 28b). The only base sherd is almost pointed (Fig. 28c).

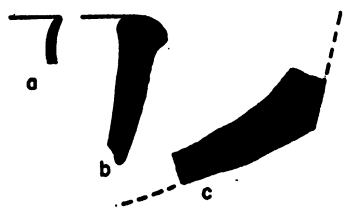


FIG. 28. Pottery profiles, Karim Cream Surface ware, Morasi IV, Cut 4. Slightly more than 1/2.

GLAZE WARE

Plate 23i–j

Four fragments of Early Islamic Glaze ware occurred in the top 20 cm.: two of turquoise, and two of green ware dating approximately between the tenth and eleventh centuries A.D.[2]

ROULETTED WARE

Plate 23k–l

One fragment of a vessel decorated with a roulette-impressed band was found. This is almost identical to the pre-Arretine wares of this type reported by Wheeler from Arikamedu and other Indian sites.[3]

KANDAHAR COARSE WARE

Plate 23h

Several fragments occur, possibly historic coarse ware. Similar coarse wares occurred well into Islamic times.[4]

TERRA-COTTA FEMALE FIGURINE

Plate 23p; Figure 8b

The headless terra-cotta figurine found in the 20–40-cm. level probably belongs to Morasi III. The style of execution differs in all respects from that of the Morasi IIa figurine (Pl. 23n; Fig. 8a). Entirely unimaginative and formal-

[1] Tobler, 1950, Pl. 66.

[2] Dupree, 1958, 193–194.

[3] Wheeler, Ghosh, and Deva, 1946, 45–49, Pl. 29, Fig. A9.

[4] Dupree, 1958, 248–250.

ized, with a tubular body, small pinches of clay as breasts, triangular pinches of clay as arms, and unelaborated necklace and pendant, this figurine seems to represent the collapse of the vigorous artistic style of the earlier levels. Unfortunately, the head, which is needed to verify or reject such a hypothesis, is missing.[1]

[1] See Casal, 1961, Pl. 42.

Metal

Figure 10c

A copper compartmented seal found at 53 cm. in a disturbed area probably belongs to Morasi III. A fragment of a perforated boss is found on the back.[2]

[2] See Casal, 1961, Pl. 45B.

SUMMARY AND TENTATIVE CONCLUSIONS

BECAUSE THE EXCAVATIONS at Deh Morasi Ghundai were confined to test pits, the conclusions as to results are necessarily tentative, and comparisons are limited to nearby sites.[1] In general, however, we can conclude that Deh Morasi Ghundai represents a peasant farming village peripheral to, and in its upper levels probably contemporaneous with, the beginning of the great Indus Valley civilization to the south.

MORASI I (ABOUT FOURTH MILLENNIUM B.C.; 580–620 CM.)

The few unique sherds of coarse ware that underlay the Morasi II levels resemble the earlier wares of Said Qala and possibly Rana Ghundai I. No traces of architecture were found in these silty-clay levels; the sherds are the only witnesses to possible occupation. The silty clays were probably water-deposited, so that the sherds may have been carried to the site from the outside, although none exhibited marked rolling and most of them were uncovered in the upper part of Morasi I.

MORASI II (ABOUT 3000–2000 B.C.; 100–580 CM.)

Evolutionary processes worked slowly but surely throughout the Morasi II levels. Here we find a localized peasant village, similar in many ways to the over-all village stratum of the fourth to third millennium B.C. in the Middle East, but with several localized, continuing traditions.

The painted pottery stylistically relates to both the northern (Black-on-Red) and southern (Black-on-Buff) Iranian traditions, especially to Hissar I and Tall-i-Bakun A, Susa I, Giyan V, and Anau I. Nothing appears to be as early as Sialk II; the closest total relationships are with Sialk III and the recent Turkistan finds of Namazga III (carbon-14 dates, 2750 ± 200 B.C.).[2] The Morasi II ceramics also have design motifs strikingly similar to the pre-Harappan Indian and Pakistani sites, especially Rana Ghundai II (Piggott's classification).[3] Morasi II and Mundigak III appear stylistically almost identical.

Typologically, therefore, Deh Morasi Ghundai is transitional between the northern and southern Iranian peasant village variants, which is entirely logical because the streams of influence must have coalesced in the foothills of Afghanistan and Baluchistan and impressed themselves on the existing culture base. Also, the Indus Valley civilization probably reached its climax much later than has heretofore been suspected, especially if the recent carbon-14 dates from the Kot-Diji are reliable. Ralph dates the second Indus Valley occupation level (layers) at Kot-Diji as 4161 ± 151 B.P.[4] (*ca.* 2202 ± 151 B.D.). Layer 6, the oldest Indus Valley layer, has still not been dated by carbon-14 methods. Farther west, the Iranian Plateau (including Afghanistan) never had a true urban civilization until Achaemenian times.[5]

Between 3000 and 2000 B.C., as urban civilization developed over most of the Middle East, the peasant villages continued to serve as the backbone of the economy which supported the urban rise. Control of the guaranteed food surplus is a prerequisite before the specialization necessary for complex city life can arise. We know more about the early urban sites than we do about the villages responsible for keeping the food storage bins of Mohenjo-Daro and Harappa filled. Casal reports a smaller granary from Mundigak VII.[6] Could this have been a local tax-collecting point or a transshipment area for a trading post?

We need to learn more about the dual cultural patterns, the village life as compared and contrasted to town and city life, for the period between 3000 and 1500 B.C. The Morasi II and Mundigak III levels extend our knowledge of the Afghan area.

MORASI IIA (520–580 CM.); PHASES DETERMINED BY MAJOR STRATIGRAPHIC CHANGES

The major undecorated wares of Morasi IIa,

[1] Fortunately we have some relatively close comparative material. After we excavated at Deh Morasi Ghundai, the French, under the direction of M. Jean-Marie Casal, tested the mound of Mundigak, about 20 miles northeast of Kandahar, and continued to excavate there for several seasons; Casal, 1955, 1956. My comparative studies cause me to differ slightly from Casal, 1961, and his correlations with other sites. See Casal's "Tableau Chronologique" at the end of his first volume; Casal, 1961.

[2] Masson, 1961.

[3] Piggott, 1950, 120.

[4] Ralph, 1959.

[5] Ghirshman, 1954.

[6] Casal, 1955, 833; 1961, 92–96.

Panjwai Cream Surface and Maiwand Red Surface, appear in the lowest levels of Morasi IIa and continue throughout the site into the mixed levels of Morasi IV.

The painted pottery is decorated almost exclusively with geometric designs and bears very few hints of floral or animal motifs. Stylistic tie-ins with Quetta ware are obvious, and the few reported finds from Mundigak are obvious. The step motif (most common at Deh Morasi Ghundai) is widely distributed in both north and south Iran but is rare south of the Quetta Valley in Pakistan. Our limited sample may not, however, include the full range of designs. But other motifs (animal bodies and painted alternate and opposing comb markings) recall Kulli ware. Shapes, especially goblet types, also tie in with Quetta ware and Mundigak. Morasi goblet types are common all over Sind[1]; some step motifs also occur.[2] Similar goblets are found in Baluchistan.[3] The Siestan wares reported by Fairservis (1961) have many motifs in common with those of Morasi II.[4]

Numerically the closest stylistically are the painted designs in the Sialk III levels.[5] None of the fine Hissar II gray-black ware is found at Deh Morasi Ghundai. These polished, finely constructed Hissar vessels may have some relation to the northern Black Polished ware of India.

The terra-cotta female figurine (Pl. 23o; Fig. 8a) is a classic Zhob example, with closely similar finds in the Quetta Valley and Mundigak.

Copper fragments also occur early in Morasi IIa in the form of "pins,"[6] a handle fragment (Fig. 9b), and several fragments of a tube (Fig. 9a) which was possibly used as a ritual drinking tube. Copper tubing is also found in the Hissar II levels.[7] Schmidt says the Hissar finds are part of a tubular necklace. Similar types of tubing are found at Tepe Gawra, and one of these finds is fairly similar to the mouthpiece of the musical instrument.[8] Found under a wall of the Stratum XI Temple, a whole altar complex similar to the one found in Morasi IIb was uncovered. Several other Gawra finds are reminiscent of the Morasi IIa shrine complex. For example, a seal in black limestone portrays a drinking scene[9]: a female faces to the right, a male is opposite her, both drink from a common vessel probably with copper tubes; this is a Stratum VI seal. Another seal illustrating a shrine complex was found in Stratum XI-A.[10] I quote Tobler's description of the seal: "In the center of this impression is a square object with three vertical, triangular projections on top, which may be a *horned* [italics mine] altar. The body of the altar has a ribbed or fluted panel. To the right of the altar is a bent human figure, with one arm reaching behind his head, where he seems to be holding an object of some kind, perhaps a vessel. To the left of the altar is a large triangle."[11] Hollow bone tubes[12] found in many Middle Eastern prehistoric sites may have been used as drinking tubes, and possibly the drinking tubes described above are bone and not copper. However, bone tubes do not bend in the middle as do the tubes on most of the scenes depicted on seals.

The compartmented steatite seal (Fig. 10a) has many counterparts in the peasant village sites of the Middle East and the Indian subcontinent, but most similar finds are of copper or bronze. The Mundigak stone seals most nearly like the Morasi IIa seal were found in Periods II and IV,1.[13] Identical "battlement" step patterns occur architecturally at Mundigak (Period IV,1),[14] and on stone tool handles in Periods III and IV.[15] Clay seals of this type were found in the Quetta Valley at Damb Sadaat II and III.[16]

The Mundigak II,2 stone seal[17] is identical with a "Jhukar" seal from Chanhu Daro.[18] Mundigak, Level 4, is below the carbon-14 date for Level 6 (2625±300 B.C.), which merely emphasizes again the mixture of the material finds at Chanhu Daro. I have discussed this problem in detail elsewhere.[19]

[1] Majumdar, 1934, Pl. 36.
[2] Majumdar, 1934, Pl. 39, Fig. 13.
[3] Hargreaves, 1929, Pl. 19, Figs. 2, 13; Stein, 1931, Pl. 21, Kul. 1. v. 1, Kul. 1. v. 3.
[4] Fairservis, 1959, 1961.
[5] Ghirshman, 1938, Pls. 76–83.
[6] See also Casal, 1961, Fig. 139.
[7] Schmidt, 1937, 207, Pl. 54, Figs. H2019, H3861.
[8] Tobler, 1950, 213, Pl. 182, Fig. 2.
[9] Speiser, 1935, 130, Pl. 61:66.
[10] Tobler, 1950, Pls. 89d, 163:82.
[11] Tobler, 1950, 183.
[12] Casal, 1961, Fig. 132:6.
[13] Casal, 1961, Pl. 12B.
[14] Casal, 1961, Pl. 12B.
[15] Casal, 1961, Fig. 135:11c.
[16] Fairservis, 1956, 229, Fig. 23.
[17] Casal, 1961, 4; Pl. 45A, 2.
[18] MacKay, 1943, Pl. 49, Fig. 15.
[19] Dupree, 1958, 233–234.

The fiddle-shaped limestone hoe (Fig. 12a) is another important object for comparative purposes. The hoe is chipped and pecked. Hoes that are most nearly comparable were found at Hissar[1] and Mundigak.[2]

The alabaster cup fragment (Pl. 23q; Fig. 13) is very similar to finds at Damb Sadaat II[3] and Mundigak,[4] which are abundant in Mundigak III, and reach a climax early in Mundigak IV, but it is difficult to use such objects for comparative dating.

The Morasi stone boat lamps (not illustrated) are very similar to those of Hissar II.[5]

Morasi IIb (280–420 Cm.)

The Morasi IIb levels contain several interesting architectural features, but they were possibly not so intensively occupied as was the Morasi IIa level. Eleven sun-dried mud bricks with a flattened, plano-convex cross-section formed an oven. Table 6 gives comparative data on the Morasi bricks and those of several Pakistani sites. Rectangular bricks, of the same size as the oven bricks, appeared in a Morasi IIb wall.

New balloon-shaped goblets appeared among the forms of Panjwai Cream Surface ware, like those of Mundigak II and IV,1.[6] A fragment of a hollow stand (Fig. 14k) is not footed like the finds from the Quetta Valley, Mundigak, Hissar, and Baluchistan. One Black-on-Buff painted sherd has a motif similar to the ibex on one of the Mundigak, "brandy balloons."[7]

A few sherds of a new utilitarian cooking and storing ware (Kandahar Coarse ware) appear in Morasi IIb.

The leg of the terra-cotta animal figurine (Fig. 16) is too fragmentary to be diagnostic.

A stone hoe similar to the Morasi IIb chipped and pecked limestone hoe (Fig. 17a) was found at Sialk on the surface of the north mound,[8] and an identical find occurs at Haggi Mohammed,[9] as do many specimens at Mundigak.[10]

[1] Schmidt, 1937, Pl. 64, Fig. H2596.
[2] Casal, 1961, Pl. 38A.
[3] Fairservis, 1956, 237, Fig. 34c.
[4] Casal, 1961, Fig. 134:1, 1a.
[5] Schmidt, 1937, Pl. 31, Fig. H3642.
[6] Casal, 1955, 834, Figs. 20–26; 1961, Fig. 59, No. 116, Figs. 64, 65.
[7] Casal, 1955, 834, Fig. 20; 1961, Pl. 32B.
[8] Ghirshman, 1938, Pl. 57, Fig. 9.
[9] Charlotte Ziegler, 1953, 59, Pl. 35h.
[10] Casal, 1961, Pl. 38A.

Morasi IIc (100–280 Cm.)

The step motif continues in this period to be the most popular painted pottery design. Several Morasi IIc objects lend themselves to comparison with those from other archeological sites: the leg of the terra-cotta human figurine and the bird figurine, the clay sling missile, and the steatite compartmented seal with cruciform motif.

The leg of the human figurine (Fig. 21a) probably belonged to a Zhob Valley figurine type and is identical to a leg found at Damb Sadaat III Level.[11]

Bird figurines (Fig. 21b) are common in the Indus Valley sites: upper levels at Mohenjo-Daro[12] and Harappa.[13] Often they occur in the form of whistles at Chanhu-Daro and other Sind sites.[14] Bird fragments also occurred in the Damb Sadaat II and III levels.[15]

Ovoid clay sling pellets (Fig. 21c) occur as far west as Tepe Gawra, where a cache of pellets was found in association with "cult objects of the horned type,"[16] and in Period IV at Mundigak.[17]

The steatite seal (Fig. 10b) is similar to several Mundigak III seals.[18] Other reasonably similar steatite seals reach all the way from Hissar III,[19] Sialk III,[20] and Giyan Vc[21] to Tepe Gawra.[22] The Morasi, Hissar III, and most Mundigak seals are squarish; the Sialk, Giyan, and Gawra finds are circular. The same squarish seals also occur in the earliest levels of Hissar I[23]; circular ones also occur in Hissar I[24] and Hissar II.[25]

Morasi III (About 2000 b.c.; 60–100 Cm.)

This is the period of shallow occupation and a burial lined with baked bricks (Table 6). The step design so popular in Morasi II almost dis-

[11] Fairservis, 1956, 225, Fig. 17f.
[12] MacKay, 1937–1938, Vol. 2, Pl. 77, Fig. 5.
[13] Vats, 1940, Vol. 2, Pl. 120, Figs. 19–21.
[14] Majumdar, 1934, Pl. 21, Figs. 6, 15.
[15] Fairservis, 1956, 228, Fig. 20c–e.
[16] Tobler, 1950, 173–174, Pl. 87b; see Casal, 1961, 229, No. 25, for occurrence in Mundigak II,2.
[17] Casal, 1961, 228, Pl. 37B.
[18] Casal, 1955, 832, Fig. 3; 1961, Pl. 45A.
[19] Schmidt, 1937, Pl. 49, Fig. H1939.
[20] Ghirshman, 1938, Pl. 86, Figs. S.85, S.417.
[21] Contenau and Ghirshman, 1935, Pl. 38, Fig. 41.
[22] Tobler, 1950, Pl. 88, Fig. 4.
[23] Schmidt, 1937, Pl. 15, Fig. H3364.
[24] Schmidt, 1937, Pl. 15, Figs. H4384, H4447.
[25] Schmidt, 1937, Pl. 28, Fig. H3712.

TABLE 6

COMPARISON OF BRICK MEASUREMENTS FROM SEVERAL SITES (IN INCHES)

	Length	Width	Height
Sun-dried bricks			
Deh Morasi Ghundai	10.00	8.10	6.25
Damb Sadaat			
Group A, Wall A	16.50	8.00	4.00
Group B			
Platforms	24.00	12.00	4.75
Room 1, wall	18.60	8.00	*ca.* 0.30
Room 2, wall	20.75	11.00	6.00
Room 3, wall	14.50	4.75	*ca.* 0.30
Room A, floor	22.00	9.00	4.00
Mohenjo-Daro (baked and unbaked)			
DK area	15.00	8.00	3.50
Intermediate II Phase	15.00	8.00	3.50
	14.85	7.30	3.50
	6.10	4.00	—
	6.30	4.00	—
Nal	12.00	12.00	7.50
Rana Ghundai	13.00	6.80	2.50
Periano Ghundai	14.00	9.00	2.00
Dabar Kot	24.00	16.00	4.00
Baked bricks			
Deh Morasi	12.00	11.00	3.00
Mohenjo-Daro (Late III)	11.75	5.75	2.75
Sutkagen-dor	16.00	6.00	2.50

appears. A new ware, Pushmul Red Slip, appears and continues into Morasi IV.

MORASI IV (AFTER 2000 B.C.; 0–60 CM.; THE MIXED UPPER LEVELS)

Deh Morasi Ghundai appears to have been abandoned between 2000 B.C. and 1500 B.C. Possibly the peasant farmers moved nearer the rivers. Deh Morasi Ghundai is one of the smallest mounds in the tongue of land between the Arghandab, Tarnak, and Dori rivers; it is also one of the most distant from the waters of these three rivers. The village site may have been abandoned because of the gradual westward shift of the rivers.

New and interesting sherds appear in these mixed levels and on the surface (see pp. 113–114). The most interesting finds are the "rouletted" sherds (Pl. 23k–l), which might indicate a relation to the rouletted ware of India (see p. 113), and the terra-cotta female figurine of a later type, probably belonging to the Morasi III Period. The figurines from Mundigak IV,1–2 seem to belong to the same artistic school.[1]

The copper compartmented seal (Fig. 10c) has many counterparts, e.g., at Hissar IIB[2] and IIIB,[3] Anau III,[4] Susa,[5] and Mundigak.[6]

[1] Casal, 1955, 832, Fig. 4; 1956, Fig. 2; 1961, Pl. 42.
[2] Piggott, 1943, 177, Fig. 4:3.
[3] Schmidt, 1937, 198, Fig. 118, H2697.
[4] Pumpelly, 1908, Fig. 257.
[5] Piggott, 1943, 177, Fig. 4:7.
[6] Casal, 1961, Pl. 45B.

ADDENDUM

In May, 1962, when this monograph was being edited, I received a copy of Jean-Marie Casal's excellent publication on Mundigak[1] and the final report on the plant remains of Morasi IIa from Prof. K. A. Chowdhury (see pp. 126–131). Also, through the courtesy of Mr. M. A. Motamidi, the Director of the Kabul Museum, I had an opportunity recently to examine the Mundigak specimens in that museum. Both the published report and Chowdhury's contribution to this monograph deserve comment, though neither alters my major conclusions concerning the Morasi material. Figure 29 presents my interpretation of how the Morasi and Mundigak phases compare chronologically.

[1] Casal, 1961.

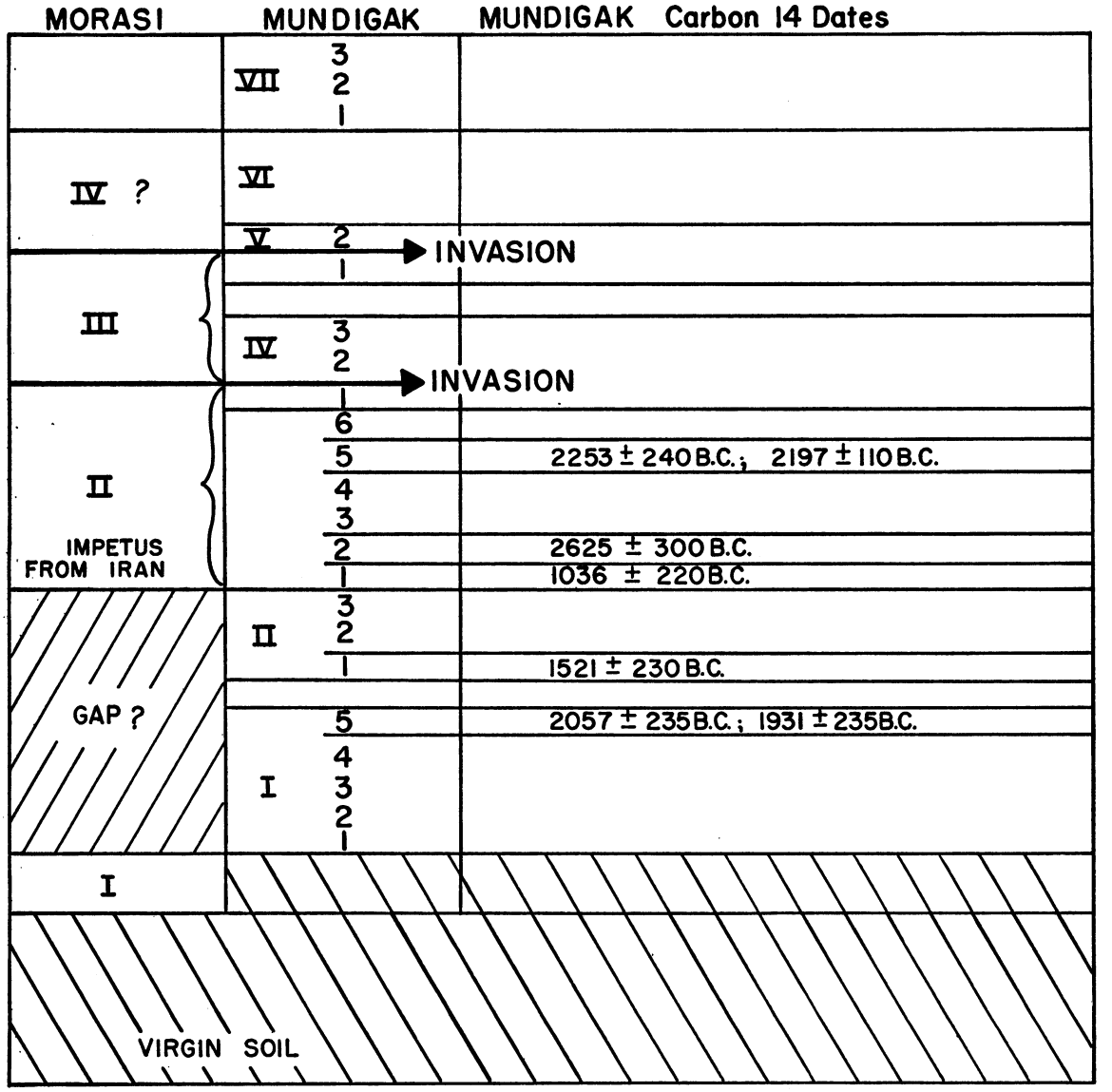


Fig. 29. Morasi-Mundigak chronological comparisons (from Casal, 1961, 258). The samples are probably contaminated, because Casal collected before techniques of field collecting were refined.

Casal presents a regional comparative chart at the end of his first volume.

All the pottery in Morasi I (Said Qala Coarse ware) appears to be cruder than any pottery from Mundigak I. In fact, at Morasi there are no total assemblages comparable to Mundigak I and II; however, Morasi II and Mundigak III, the emergent peasant village communities, compare quite well. Identical wares of "Quetta Type" occur at both sites; at Mundigak there is a surprising absence of the popular Morasi ware, Nurzai Black-on-Red Surface. Casal does not discuss the undecorated pottery in detail, but wares similar to the Morasi undecorated types exist in quantity at Mundigak, to judge from the pottery dump which I examined in the summer of 1960. Many items found at Mundigak, however, simply do not occur at Morasi, for example, pottery drains, flint projectile points, and bronze objects.

We must remember that Mundigak proved to be a much more massive site than Morasi and that Casal excavated at Mundigak during 10 field seasons, from 1951 to 1958. Obviously, therefore, he uncovered more material, in both quantity and diversity, than was possible at Morasi. Although Mundigak had developed into a full-fledged town[1] by Mundigak Period IV,1, Morasi, after a period of relative prosperity during Morasi II, appears to have stagnated. The invaders who left their mark on Mundigak V,1[2] may also have been responsible for the destruction of the economy of the whole Kandahar region. The earlier invaders of Mundigak (Period IV,1)[3] were possibly nomads, content with destroying the towns, looting, and departing. Morasi does not seem to have suffered during this period, and Mundigak was immediately rebuilt by its survivors.

Chowdhury's very valuable study of the plant remains (Appendix 3) adds new depth to the present monograph and opens up new interpretive possibilities. In the ensuing discussion, however, one must remember that the botanical analysis covers only a small part of Cut 4, which constitutes only a minor portion of the total site.

Although Casal found *Triticum compactum*[4] in the Mundigak village phases, Chowdhury identified no wheats from Morasi. The grasses from Morasi (*Hordeum* sp. and *Aegilops tauschii*[5]) suggest, according to Chowdhury, that the Morasi inhabitants were not food producers. This observation is interesting, because the ceramic complex and the non-ceramic assemblages of Morasi II tie in beautifully with Mundigak Periods III and IV,1, which were obviously food producing.

An interesting possibility presents itself. Were the inhabitants of the small Morasi site semi-nomadic[6] and not true sedentary agriculturists? Patterns such as this, common in modern Afghanistan,[7] may help to account for the absence of definite architecture, as well as for a lack of evidence of destruction at Morasi during the periods of destruction at Mundigak.

Generally speaking, modern Afghan semi-nomadic groups summer in the highland pastures and winter in the plains and river valleys near sedentary peasant villages. The semi-nomads seldom build permanent structures, but simply surround their tents of black goat's hair with low pisé or sun-dried brick walls. Their livestock grazes over stubbled fields, depositing manure in large quantities which the villagers plow under as fertilizer. Usually, the semi-nomads are engaged as seasonal laborers by the farmers. Their camping grounds are often deserted in the summer when they graze their flocks in the highland meadows.

To sum up, two village sites (Morasi and Mundigak) in the Kandahar Province of Afghanistan are now known to have had an almost parallel development (Morasi II and Mundigak III), following relatively independent initial phases (Morasi I and Mundigak I and II[8]). Subsequently, by about the second quarter of the third millennium B.C., Mundigak developed into an urban center. The botanical and other evidence, however, indicates that Morasi IIa may represent a semi-nomadic settlement that functioned in a symbiotic relationship with a peasant village or group of villages as yet not excavated.

[1] Casal, 1961, 47–81.
[2] Casal, 1961, 89.
[3] Casal, 1961, 67–68.
[4] Casal, 1961, 260.
[5] Ancestor of *Triticum*, and still growing wild in Afghanistan.
[6] A semi-nomadic group is constituted of herdsmen who practice some agriculture. A sizable part of the group moves with its livestock to summer pastures while the remainder tends some crops in winter headquarters.
[7] We must be cautious when assigning modern practices to prehistoric periods, but we must also call attention to the possibilities of comparison.
[8] For phases 1 and 2 of Mundigak I, Casal postulates a possibly nomadic culture; Casal, 1961, 32.

APPENDIX 1. NOTES ON THE MANUFACTURE OF POTTERY AT DEH MORASI GHUNDAI

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AFTER THE INFORMAL STUDY that I made of the Shamshir Ghar potsherds,[1] Dupree asked me to glance at the sherd collection that he brought back from his soundings at Deh Morasi Ghundai. I should emphasize the word "glance," because the following notes by no means constitute a detailed and orderly examination of the material. However, such a study would not be justified until more extensive excavations have taken place and problems have been posed by the field archeologist that perhaps can be helpfully studied through the technical examination of the materials. A detailed study of potsherds without a culturally oriented approach to the work is a sterile procedure. Yet a cursory examination of these materials can be justified because of the lack of knowledge concerning the earlier ceramic developments in Afghanistan. Such an examination would be a waste of time for materials from many parts of the Near East. Unfortunately, I was unable to complete the work when Dupree was preparing his manuscript, so this free-standing, unintegrated appendix was written when the final editing of the report was under way.

One advantage of the late preparation of this report is that in the interim I have had the opportunity to visit Afghanistan, handled much of the earlier pottery that was available, including that of Dr. Klaus Fischer who kindly showed me his collections. I was also able to observe in detail the manufacture of pottery by a nomadic group encamped for the summer at the village of Qala Murad Beg just south of Charikar (which is north of Kabul). This visit to the village was made possible through the kindness of Mr. Kapica, Vice President of Afghan Tours.

THE SAMPLE

All the Deh Morasi sherds (about 500) were handled when Dupree was studying the material, and 10 sherds were selected as representative of the range of textures and firing colors that were observed. Two years later I re-examined the residual collection of sherds at the Pennsylvania State University which consists of 120 items. All this latter group was viewed under a binocular microscope.[2] Evidences of textural differences, clues as to manufacture, and wear through use were sought.

Four sherds were selected for more detailed study, and thin sections of them were prepared that are 0.03 mm. in thickness. Such a thin slice makes it possible to study the cross-sections of a sherd under a petrographic microscope at high magnifications. In the present case the types of minerals and their approximate size distributions were noted and recorded. The mineralogical textures of the four thin sections were compared to see if there were a suggestion that more than one type of clay had been used at the site.

OBSERVATIONS

The collection of sherds is very uniform in terms of the clay used and its texture. The wares established by Dupree in terms of shape, decoration, and so on, should not be thought to represent more than a series of pottery styles manufactured in or near one village through a considerable period of time.

All the pottery was wheelmade except for a few very tiny, straw-tempered, soft sherds that came from the lowest levels of the site. The latter might represent an earlier tradition, but because of the small size of the sample such an assumption would not be safe. They might have come from one or two vessels that a woman made in her courtyard of a clay that had a straw admixture because it was being used to form bricks and mud plastering for house walls. Animal dung, rich in chaff, might have been added to the clay to make it more plastic. One flat basal sherd shows spiral marking on the center of the interior surface. It would seem that a flat slab of clay was placed in the potter's

[1] Dupree, 1958, 294.

[2] It is a pleasure to acknowledge the generosity of the Wenner-Gren Foundation for Anthropological Research which provided me with the binocular microscope used in this study and in others.

wheel as the first step in forming a vessel. Coils of clay could then be added. The rim areas of the bowls show fine striations, an indication that they were more carefully finished than was the body.

The lower exterior area on the bowls below the shoulder has many scraping marks that have not been very well removed during the final stages of surface treatment of the partly dried vessels. Scraping is necessary so as to thin down the walls, as a thicker wall tends to develop near the base of a wheelmade pot when it is produced by unskilled potters. After the vessel is removed from the wheel, it is necessary to scrape away the excess clay when the piece is dry enough to stand this treatment. In better-made wares there is usually a final surface smoothing which is lacking in many pieces at Deh Morasi Ghundai. One sherd showed in its fracture the overlap zone where additional clay had been added as the vessel was shaped. Some interior walls still showed evidence of the finger ridging that results in wheelmade pottery if it is not carefully finished with a template or scraped on being removed from the wheel.

On the pieces that were well finished through wet-smoothing, a thin layer of very fine clay was drawn to the surface, somewhat like the process involved in troweling a concrete sidewalk after it is laid so as to float the finer particles of cement to the top to produce a smoother surface. Unfortunately, the fine clay layer on the surface, which might at first glance be thought to be a slip, tends to spall off the much more sandy body clay of the pottery. There is too great a textural difference, with the result that there is considerable disparity in the shrinkage of these two zones in drying, thus causing a separation, somewhat like an icing. Except in one or two cases, I see no evidence of a slip. The mineral inclusions are the same in the fine surface and in the coarser body.

There is a little variation in the texture of the clay, a few sherds having fewer inclusions than the others, but this probably represents the normal range of texture variation in the local clay. The mineral grains tend to be sub-rounded, which suggests that water-deposited clay had been used. This conclusion is obvious for clays in a mountainous region, where they can be transported by heavy rains and by stream action. Most of the visible grains are of limestone. It is interesting that very little of the limestone has been leached out of the sherds, thus indicating that the sherds were not buried in an acid type of soil.

Only one sherd showed a drying crack. This might be expected because the sandy nature of the clay would make it possible for the green vessels to be dried easily without difficulty.

Most of the pottery fired to a salmon-red color. In some cases the surface turned tan to yellow, resembling a slip, and a few of the pieces are more highly fired, with the resultant development of a yellow color throughout the body. The significance of these clay color developments in a lime-rich clay was discussed in the Shamshir Ghar appendix,[1] so are not repeated here. In general, I should estimate that most of the pottery had been fired to a temperature around 800° C. A very few sherds developed the green color indicative of over-firing and incipient slagging, a temperature just below that at which the clay would soften and the vessel would warp. Two or three sherds have a black core of the type that is sometimes found in building brick; the firing in the kiln was so rapid that the carbon could not be completely burned out before the surface porosity of the vessel was greatly decreased by firing shrinkage. Because of the uniformity in surface color of the sherds, it seems likely that the vessels were fired in a kiln rather than in an open fire. Such variations in color as do occur that are related to firing temperature could all be found on vessels drawn from one firing of a kiln, because there is considerable temperature variation within most simple kilns. Probably one should think of a simple up-draft kiln, open at the top, with a temporary crown of broken vessels, a kiln much like that being used today at Qala Murad Beg.

Microscopic Study of Four Sherds

The four thin sections of specially selected sherds were carefully studied twice, with an interval of about a year between the two examinations. The sherds had been chosen to see if different types of clay had been used. One sherd had a cream surface on a salmon body. Its appearance indicated that it might have a slip, but the thin-section analysis showed that there was no gradation zone in terms of minerals; aside from the color difference, the surface and the body were of the same material. A discus-

[1] Dupree, 1958, 295.

sion of this lighter-colored surface was presented in the Shamshir Ghar report.[1] The four sherds show the same type of clay, with differences in the degree of fineness of the mineral grains present. This would fall within a normal range of textural variation. There are more limestone and flint fragments in some of the sections, as opposed to quartz and sandstone in the others, but there is an overlapping of the two.

A detailed commentary on the minerals present and their size range, reproducing a page of a laboratory notebook, would serve no scholarly purpose. The conclusions drawn from the thin-section study are briefly stated. However, a listing of the minerals present might be of some interest: quartz, flint, sandstone, feldspar, mafic minerals, biotite, and muscovite occur in varying amounts. The brown mica, biotite, can be seen on the surface of the pottery glistening when the sherds are examined under a bright light. The mineral range is normal for a mountain area. There is no point in a discussion of geological origins or weathering products in this paper. The four thin sections strengthened the conclusions obtained from the examination of the large collection of sherds under the binocular microscope.

[1] Dupree, 1958, 294–298.

Conclusion

The Deh Morasi Ghundai sherds do not represent a ware of technical perfection, but they show a uniform technique over an extended time range, one that produced a competent utility ware. This seems to be a local village ware, perhaps not unlike that made by the potters in Afghanistan today. If one ignores shape and decoration, there is a surprising uniformity in all the material examined, which suggests a stable ceramic cultural tradition.

APPENDIX 2. IDENTIFICATION OF CERTAIN STONES FOUND IN VARIOUS LEVELS

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THE IDENTIFICATION NUMBERS are those of the catalogue of the collections in the Department of Anthropology of the American Museum of Natural History.

MORASI I

73-6847: Fragment of a rounded pebble or cobble of chert or very fine-grained quartzite; smooth outer surface is natural (surface alteration), but cause of breaks is not determinable.

73-6848: Limestone fragment, weathered on surface; no evidence of other than natural shaping.

73-6849: Fragment of rounded cobble of a dark porphyritic volcanic rock, with one fairly flat surface; pitted character due to weathering out of phenocrysts, darkening of surface (desert varnish), slight alteration of rim.

MORASI IIA

73-6850: Subspherical cobble of dark green andesite, showing common secondary flaking which has largely destroyed original weathered surface.

73-6851: Fragment of rounded cobble of white, fine-grained quartzite, with reddish and black stains on smooth original surface; thin alteration of rim due to weathering; original shape is natural, but flat surface opposite number may be due to grinding.

73-6852: Essentially the same as 73-6856.

73-6853: Angular fragment of green andesite: natural.

73-6854: Essentially the same as 73-6855.

73-6855: Fragment of round cobble of green argillite or andesite, weathered to red or original surface and to slight depth below it; natural.

73-6856: Flake of red shale; natural.

73-6857: Essentially the same as 73-6855.

73-6858: Angular chip of fine-grained quartzite; natural.

73-6859: Fragment of a rounded, originally ellipsoidal cobble of laminated siltstone or argillite.

73-6860: Flake of limestone or basalt, with one fresh surface due to spalling as a result of a blow with a hard object; possibly artificial.

73-6861: Weathered angular fragment of limestone; natural.

73-6862: Elliptical disc of white marble or anhydrite; artificial flaking.

73-6863: Fragment of a rounded slab of a light-colored porphyritic volcanic rock (rhyolite?); weathered rim found on smooth surfaces, not on cross fracture.

73-6864: Subround pebble of fine-grained sandstone; probably artificially smoothed.

73-6865: Round pebble of limestone; stream-worn.

73-6866: Large, nearly spherical mass of magnetite, showing secondary flaking and chatter-marking; smooth original surface is probably natural, but flaking and chipping are result of use.

73-6867: Angular flake of dark basalt, slightly weathered.

73-6868: Angular fragment of limestone or basalt pebble; origin not determinable.

MORASI IIB

73-6869: Fragment of a large, rounded cobble, somewhat flattened, of fine sandstone; thin rim of reddish alteration; incipient desert varnish.

73-6870: Irregular round pebble of variegated jasper.

73-6871: Fragment of round cobble of light-colored volcanic rock, showing surface reddening and thin alteration rim; probably natural.

73-6872: Rounded disc-shaped pebble of variegated jasper.

73-6873: Well-rounded pebble of a green, fine-grained rock (possibly andesite); possibly artificially worked.

73-6874: Fragment of round cobble of fine-grained sandstone, with one flat surface; alteration rim on flat surface is same thickness as elsewhere.

73-6875: Angular pebble of fine-grained

sandstone with one flat surface showing alteration rim.

Morasi IIc

73-6876: Fragment of subround cobble of medium-colored volcanic rock (andesite), showing surface reddening and very thin alteration rim.

73-6877: Small chip of light gray limestone.

73-6878: Wedge-shaped fragment of green serpentine.

73-6879: Broken piece of rounded slab of limestone or basalt; smooth surface and breaks probably both natural.

73-6880: Irregularly shaped piece of laminated reddish sandstone, with depression on one surface that is distinctively lighter than the remainder of the piece, possibly because of rubbing or grinding.

Morasi III

73-6881: Irregular chip of light gray limestone.

Morasi IV

73-6882: Irregular flake of white limestone or anhydrite, with black coating, probably desert varnish, on one surface.

73-6883: Angular pebble of white fine-grained rock (chert?).

73-6884: Round pebble of green fine-grained rock (argillite), unweathered; probably artificial.

73-6885: Angular pebble composed of red siltstone cut by calcite veins.

None of the artificially worked or utilized stones exhibit any diagnostic, patterned traits; they are primarily round pounders or crude scraper flakes.

APPENDIX 3. PLANT REMAINS FROM DEH MORASI GHUNDAI, AFGHANISTAN

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MY THANKS ARE DUE to Dr. Dupree for providing me with the opportunity of studying the interesting plant material from Deh Morasi. I am also very grateful to Mr. Mohammad Yaqub, a one-time student and presently a colleague, who helped with the preparation of microscopic slides, a laborious task extremely well done, and to Mr. Mohammad Haseen Farooqui of the Botany Department of Aligarh University for assisting in photography. A number of colleagues have generously donated grains and plant materials, for which my thanks are due: Dr. G. D. H. Bell, Plant Breeding Institute, Cambridge, England; Prof. A. Akerman, Swedish Seed Association, Svalöf, Sweden; and Dr. B. P. Pal, I.A.R.I., Pusa, New Delhi, India.

INTRODUCTION

The plant remains reported here were recovered from a mud brick excavated from the altar-shrine complex. The plant contents of the mud brick were found to be grains, and the stems, leaves, and leaf-bases of some members of the grass family (Gramineae). It was possible to identify one plant as a species of *Hordeum*, most closely resembling *Hordeum vulgare* var. *afghana*, and the other as *Aegilops tauschii*.

Both plants grow in Afghanistan at the present time.

Both the archeological and botanical significance of the find is here considered. The Deh Morasi Ghundai culture was not only isolated but, considering its age, rather underdeveloped.

MATERIAL

The material came to me in the form of a mud brick (Pl. 24a). Since the plant remains were embedded in the mud, it was possible to recover them only in fragments (Pl. 24b). Some pieces were partially carbonized; others were in an extreme state of deterioration. A few mud casts were also recovered.

METHODS OF STUDY

Among the fragmentary plant materials recovered were some grains and portions of stem, leaf, and leaf-bases of the Gramineae. Some of these were merely the mud casts of the plant materials. Observed under a wide-field binocular microscope, the plant parts seemed to be in a fairly good state of preservation, but actually this was deceptive. When an attempt was made to prepare slides for microscopic examination, it was impossible to embed the materials either in paraffin or in colloidin-paraffin. The material disintegrated as soon as it was placed in any liquid. Therefore, the first stage of the investigation had to be confined to morphological study. For the next stage, attempts were made to obtain peels of epidermal cells from different parts of the plants. Because of the poor condition of the material, Artschwager's peel method did not give satisfactory results. However, with some modifications of this method, it was finally possible to get some fairly good peels.

Initially, the anatomical structure was difficult to discern. Attempts to stain the peels with Heidenhain's haematoxylin or saffranin or Bismarck brown were not a complete success. Of about 100 slides, it was possible to stain only 10, but when the slides were studied under a phase contrast microscope, more detail could be observed.

Since the plant parts were fragmentary and separate from one another, extra care had to be taken to avoid confusion in identification. The safest procedure appeared to be to classify the grains on the basis of their morphological characters. Here advantage was also taken of the morphology of the available floral parts. This morphological classification was then checked with anatomical details found on different plant parts. Peels from the stem alone proved to be the most useful in the classification and identification.[1]

RESULTS OF STUDY AND IDENTIFICATION

MORPHOLOGY: More than 50 grains and portions of grains were recovered. According to

[1] Metcalfe, 1960.

TABLE 7

INDIVIDUAL AND AVERAGE DIMENSIONS OF GRAIN SAMPLE A

Serial Number	Length in Mm.	Breadth in Mm.	Remarks
1	8.0	2.5	Actual grain
2	7.0	3.2	Actual grain
3	5.0	3.0	Actual grain
4	5.8	2.6	Actual grain
5	7.5	3.5	Grain cast
6	6.0	3.0	Grain cast
7	6.0	3.0	Grain cast
8	6.0	3.0	Grain cast
9	6.0	3.5	Grain cast
10	5.5	3.5	Grain cast
Average dimensions, 6.2 by 3.0 mm.			

size and shape, they can be divided into two lots: Sample A and Sample B. The individual and average dimensions of the grains are given in Tables 7 and 8.

Sample A differs from Sample B not only in size but in shape. The grains of Sample A have a distinct bulge in the center (Pl. 24c–f), a character that is absent from Sample B (Pl. 24j).

The grains of Sample A show a marked resemblance to some well-known cereals. From a comparative study of the seeds of four cereals (*Avena sativa*, *Hordeum vulgare*, *Secale cereale*, and *Triticum vulgare*) it was found that the sample most closely resembles *Hordeum vulgare*. This tentative classification was well supported by the presence of bristles in the groove at the base of the grain of Sample A (Pl. 24g). With all the morphological characters taken into consideration, the caryopsis of Sample A has been identified as belonging to *Hordeum* sp.

TABLE 8

INDIVIDUAL AND AVERAGE DIMENSIONS OF GRAIN SAMPLE B

Serial Number	Length in Mm.	Breadth in Mm.	Remarks
1	4.0	1.6	Actual grain
2	4.0	2.0	Actual grain
3	4.1	2.0	Actual grain
4	4.1	2.0	Actual grain
5	5.0	2.0	Actual grain
6	4.0	1.9	Actual grain
7	4.1	1.9	Actual grain
Average dimensions, 4.3 by 1.9 mm.			

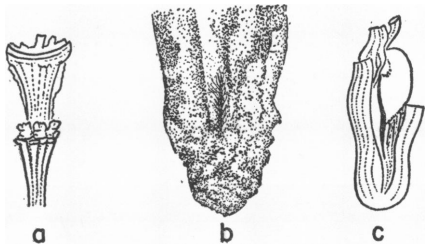

FIG. 30. a. Floret-axis from Sample A (diagrammatic). b. Grain from Sample A, showing bristles in the groove. c. Fruit from Sample B, showing enclosed grains. a, c, ×4; b, ×10.

The seeds from Sample B appear to belong to a fodder grass. By reference to the literature and by comparison with the seeds of fodder grasses, I concluded that Sample B belongs to the genus *Aegilops*. For this identification, the size and shape of the seeds (Table 9), the way the seeds are held in the fruit (Pl. 24k), and the brush-like hairs on the spikelet (Pl. 25e) were found to be useful morphological characters.

ANATOMY: A comparative study of peels of the stem of some Gramineae shows that it is possible to separate some of them at the generic level (Table 9). The shape and size of the stomata and the shape of the subsidiary cells of stomata have some diagnostic value. Advantage can also be taken of the structure of the walls of long cells. In some genera the walls are both straight and sinuous (Pl. 25a, c); in others they are sinuous (Pl. 25b). Of all the genera studied, *Aegilops* seems to have some characteristic microhairs and prickles on the stem, which are absent in others (Pls. 241, 25f). From a study of these anatomical structures also, I conclude that the unknown members of the grass family appear to belong to the genera *Hordeum* and *Aegilops;* Sample A to *Hordeum* and Sample B to *Aegilops*. Thus the classification based on morphological grounds is fully confirmed by anatomical study.

IDENTIFICATION OF SPECIES: The procedure for this part of the investigation was the same as above, i.e., the morphological identification is followed by anatomical confirmation.

It was possible to recover some spike-axes from Sample A. The persistence of these axes indicates that they are not brittle. The unknown *Hordeum*, therefore, belongs to the culti-

TABLE 9

EPIDERMAL CELLS OF STEM OF SOME GRAMINEAE AT GENERIC LEVEL

Genera	Shape of Stomata	Shape of Subsidiary Cell of Stomata	Outline of Long Cells	Prickles and Hairs
Aegilops	Strong tendency to be round to rectangular. Size: 51 by 43.2, 45 by 45, 34.4 by 30.6 μ	Low to high-domed	Sinuous	Prickle-hair angular. Microhair long and superficial, with swollen base
Avena	Longer than broad. Size: 51 by 43.2, 51 by 39.1 μ	Low-domed	Both straight and sinuous	Prickles absent. Microhair mostly absent; when present, without swollen base
Hordeum	Longer than broad. Size: 54.6 by 34, 45 by 35.7 μ	Parallel to slightly low-domed	Both straight and sinuous	Prickles absent. Microhair mostly absent; when present, without swollen base
Secale	Outline distinctly oblong. Size: 58 by 34, 56.3 by 30.6 μ	Parallel	Both straight and sinuous	Prickles absent.[a] Microhair mostly absent; when present, without swollen base
Triticum	Prominently oblong. Size: 54.4 by 34, 51 by 31, 61.2 by 40.8 μ	Low-domed	Both straight and sinuous	Prickles absent. Microhair mostly absent; when present, without swollen base
Sample A	Longer than broad. Size: 71.4 by 30.4, 68 by 30.4 μ	Parallel to low-domed	Both straight and sinuous	
Sample B	Tendency to form more or less rectangular shape. Size: 40.8 by 34, 37.4 by 30.6 μ	Mostly low- to high-domed	Sinuous	Angular prickle-hair. Microhair with swollen base

[a] Prat (1932) reports prominent prickle, but I have not seen it.

vated variety. Furthermore, the lateral spikelets are fertile, showing their affinity to six-row barley. Another peculiarity of this barley from Deh Morasi Ghundai is that all three seats of the floret persist, even after the grains have dropped (Pl. 24h). Among the different cultivated varieties of barley examined, only one (*Hordeum vulgare* var. *afghana*) shows this characteristic habit of the floret (Pl. 24i). Morphologically the grains of Sample A show the greatest affinity to *Hordeum vulgare* var. *afghana*.

When the stems of different species and variety of *Hordeum* are compared anatomically with Sample A, there is a complete agreement in the distribution of stomata, the shape of the subsidiary cells of the stomata, and the shape of the silica and cork cells of the barley from Deh Morasi Ghundai and *Hordeum vulgare* var. *afghana* (Table 10). Thus morphologically and anatomically Sample A shows the greatest affinity to *Hordeum vulgare* var. *afghana*.

The morphological characters of Sample B that I have been able to identify are more or less the same throughout the genus; therefore, they do not permit identification as to species. How-

TABLE 10

STEM EPIDERMAL CELLS OF *Hordeum* SPECIES

Species	Distribution of Stomata	Outer Wall of Subsidiary Cell of Stomata	Short Cells	Silica Cells
H. vulgare Local	Rather scanty; mostly in single row, occasionally in rows of 2	Mostly parallel; rarely domed	Mostly single	Vertically elongated, rather scanty
H. vulgare EB 642[a]	Very scanty; in single row	Mostly parallel	Mostly in pairs when single, horizontally elongated	Both vertically and horizontally elongated
H. vulgare EB 468[a]	Rather scanty; mostly in single row, occasionally in rows of 2	Mostly parallel	About 50% single, 50% in pairs	Both vertically and horizontally elongated
H. agriocrithon[a]	Rather frequent; mostly in rows of 2–3, occasionally in single row	Parallel in almost all	Single and in pairs in almost equal number	Both vertically and horizontally elongated
H. vulgare var. *afghana*	Fairly abundant; in rows of 2–3	Slightly domed; rarely parallel	About 50% single, 50% in pairs	Fairly abundant; vertically elongated
Sample A	Fairly abundant; in rows of 2–3	Slightly domed; rarely parallel	About 50% single, 50% in pairs	Fairly abundant; vertically elongated

[a] Source: Indian Agriculture Research Institute, New Delhi.

ever, some interesting results are the outcome of an anatomical study of the various species of *Aegilops* and Sample B. In the distribution of stomata, the shape of the subsidiary cells of the stomata, and the peculiarity of the short cells, whether single or in pairs (Table 11), Specimen B resembles *Aegilops tauschii* syn. *A. squarrosa*[1] most closely.

DISCUSSION

ARCHEOLOGICAL SIGNIFICANCE: The plant remains under consideration were recovered from a mud structure believed to be an "altar-shrine complex." These remains were found embedded in mud, but their purpose is not clear. The present practice of offering food grains to deity in many parts of Asia suggests that these food plants were used by the inhabitants of Deh Morasi Ghundai as part of a ritual. If so, the occupants of the Deh Morasi site were at that time using seeds of barley (*Hordeum*) and fodder grass (*Aegilops*) as food grains indiscriminately, which further indicates a stage of culture in which agriculture was still unknown. Knowledge of cereals was confined to those grasses of which the seeds could be used as food grains. In other words, it was a gathering culture.

Helbaek points out that "wheat and barley were both grown at all phases of agricultural prehistory but with the reciprocal frequency changing during the periods."[2] He elsewhere emphasizes the same point, saying, "It is an important fact that two great Old World cereals, wheat and barley, occur together in practically all early grain deposits in Mesopotamia and Egypt."[3] But at Deh Morasi Ghundai, we find only barley grains, which leads one to conclude that barley was more important to this culture than wheat and that the culture was in a primitive stage in comparison with that of Mesopotamia and that of Egypt.

Finally, it is of some interest to know how this find compares with others. Table 12 lists the important finds of prehistoric barley. It will be observed that the Deh Morasi Ghundai culture is relatively recent when compared with Jarmo

[1] Bor, 1960.

[2] Helbaek, 1952.

[3] Braidwood and Howe, 1960.

TABLE 11

STEM EPIDERMAL CELLS OF *Aegilops* SPECIES

Species	Stomata		Short Cells	
	Distribution	Shape	Characteristics when in Pairs	Characteristics when Single
Aegilops tauschii (syn. *A. squarrosa*)[a]	Fairly frequent; mostly in rows of 1–2	Almost as wide as long	Mostly with crystal cells and cork cell empty or with granules	All cork cells with granules
A. triuncialis[a]	Fairly frequent; in rows of 1–2–3	Almost as wide as long	Almost all in pairs with crystal and empty cork cell	All cork cells empty
A. uniaristata[a]	Very scanty; in single row	Almost as wide as long	Mostly with crystal cells and empty cork cells	All cork cells empty
A. ventricosa	Fairly frequent; mostly in single row	Longer than wide	Mostly with crystal cells and empty cork cells	Cork cells, occasionally with granules
Sample B	Fairly frequent; mostly in rows of 1–2	Almost as wide as long	Mostly with crystal cells and cork cell either empty or with granules	All cork cells with granules

[a] Source: Indian Agriculture Research Institute, New Delhi.

TABLE 12

DATED OCCURRENCES OF PREHISTORIC BARLEY

Country	Name of Cereal	Age	Remarks
Jarmo, Iraq	Wheat and barley, carbonized	6750±250 B.C.	Radiocarbon dating
Fayum A, Egypt	Wheat and barley	4391±180 B.C.	Radiocarbon dating
Fayum A, Egypt	Wheat and barley, uncarbonized	4095±250 B.C.	Radiocarbon dating
Birknaes, Ostbirk, Denmark	Wheat and barley	Bronze Age, middle of first millennium B.C.	Archeological age
Mohenjo-daro and Harappa, India	Wheat and barley	2500–2000 B.C.	Archeological age
Deh Morasi Ghundai, Afghanistan	Barley and *Aegilops*, semi-carbonized	*ca.* 3000 B.C.	Compared cultural levels with radiocarbon dates at Mundigak, *ca.* 60 km. northwest of Morasi

and Fayum A[1] which are older by some thousands of years. From all points of view, Deh Morasi Ghundai seems to have been an underdeveloped culture for its time period, so that we may conclude that it had no contact with other cultural centers in Asia.

BOTANICAL SIGNIFICANCE: Cultivated barley (*Hordeum*) produces two different kinds of fruit, two-row and six-row. These two types are again divided into various groups on other morphological characters. For more than 100 years, botanists have sought the origin of cultivated barley. In 1848 Karl Koch was of the opinion that *H. spontaneum* of west Asia was the progenitor of some cultivated two-row subspecies. In 1883, De Candolle advanced the

[1] Braidwood and Howe, 1960; Chowdhury and Ghosh, 1955.

view that *H. spontaneum* might have been the source of both two-row and six-row cultivated forms, but at the same time he pointed out that a six-row wild variety, now extinct, might then have been in existence. This variety may be the ancestor of the cultivated six-row barley. Later, Koernicke expressed the view that the source of the cultivated variety now in existence was the wild two-row barley, *H. spontaneum*. Subsequently, opinions among botanists have been divided on this question, and the problem remains unsolved. Recently Helbaek,[1] a world authority on the subject, has worked out the origin of the cultivated variety of barley. His views are reproduced below:

Barley (genus *Hordeum*)
- Wild, two-row, hulled barley (*H. spontaneum*)
  - Cultivated two-row barley, hulled and naked (*H. distichum*)
    - Plains?: Cultivated, six-row, lax-eared barley, hulled and naked (*H. tetrastichum*)
    - Mountains?: Cultivated, six-row, dense-eared barley, hulled and naked (*H. hexastichum*)

The find at Deh Morasi Ghundai somehow does not fit into Helbaek's scheme of origin. Considering the isolated location of Deh Morasi Ghundai, one is inclined to conclude that the barley recovered might have developed from a wild six-row form now extinct.

There are various speculative suggestions as to the place or places where the cultivated forms of barley developed. Many more prehistoric and protohistoric sites must be examined for data on this point. I believe that in the future the plant cytogeneticists and breeders must depend more on the archeologists, the plant morphologists, and the plant anatomists for the facts on the origin of the cultivated plants than they do at present. We shall arrive at a complete picture of the past history of cultivated plants only when all those interested in the problem work together.

The presence of *Aegilops* at Deh Morasi may not be without botanical significance. It is true, the plant remains consist of barley and *Aegilops*. However, we must not forget that cytogeneticists and plant-breeders, in their latest work, have advanced the opinion that *Aegilops* is "one of the ancestors of common wheat,"[2] *Triticum*. The plant remains at Deh Morasi Ghundai may not be identified as barley and wheat, but they do attest to the presence of barley and *Aegilops*, an ancestor of wheat.

Summary

1. Some plant remains from the excavation at Deh Morasi Ghundai in 1951–1952 have been studied and are reported upon.

2. These remains have yielded grains and plant parts of *Hordeum* (barley) and *Aegilops* (a fodder grass).

3. The archeological significance of these finds is discussed with reference to ancient Mesopotamian, Egyptian, and Indian civilizations. Deh Morasi Ghundai represents an isolated culture, rather underdeveloped, considering its age.

4. The botanical significance of the find is of value. The form of barley recovered is a six-row cultivated variety closely resembling *Hordeum vulgare* var. *afghana*. The fodder grass is *Aegilops tauschii* syn. *A. squarrosa*, a species said to be one of the ancestors of common wheat (*Triticum*).

[1] Braidwood and Howe, 1960.

[2] Jenkins, 1958.

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CATALOGUE DATA FOR CERTAIN ILLUSTRATIONS

PLATES

21. Undecorated wares
    a. Morasi III, Cut 4, 80–100 cm. (73-6775)
    b. Morasi IIc, Cut 4, 160–180 cm. (73-6776)
    c. Morasi IIb, Cut 4, 340–360 cm. (73-6777)
    d. Morasi IIa, Cut 4, 520–540 cm. (73-6778)
    e. Morasi IIa, Cut 4, 560–580 cm. (73-6779)
    f. Morasi IIc, Cut 4, 200–220 cm. (73–6780)
    g. Morasi IIb, Cut 4, 340–360 cm. (73-6781)
    h. Morasi IIc, Cut 4, 260–280 cm. (73-6782)
    i. Morasi IIc, Cut 4, 160–180 cm. (73-6783)
    j. Morasi IIa, Cut 4, 520–540 cm. (73-6784)
    k. Morasi IIa, Cut 4, 520–540 cm. (73-6785)
    l. Morasi IV, Cut 4, 20–40 cm. (73-6786)
    m. Morasi IV, Cut 4, 20–40 cm. (73-6787)
    n. Morasi IV, Cut 4, 40–60 cm. (73-6788)
    o. Morasi IIc, Cut 4, 240–260 cm. (73-6789)
    p. Morasi IIc, Cut 4, 120–140 cm. (73-6790)
    q. Morasi IIc, Cut 4, 260–280 cm. (73-6791)
    r. Morasi IIc, Cut 4, 260–280 cm. (73-6792)
    s. Morasi I or IIa, Cut 4, 580–600 cm. (73-6793)

22. Decorated wares
    a. Morasi IV, Cut 4, 40–60 cm. (73-6794)
    b. Morasi IV, Cut 4, 40–60 cm. (73-6795)
    c. Surface (73-6796)
    d. Morasi II, Cut 4 (73-6797)
    e. Morasi II, Cut 4 (73-6798)
    f. Morasi II, Cut 4 (73-6799)
    g. Morasi II, Cut 4 (73-6800)
    h. Surface (73-6801)
    i. Morasi IIc, Cut 4, 180–200 cm. (73-6802)
    j. Morasi II, Cut 3 (73-6803)
    k. Morasi II, Cut 3 (73-6804)
    l. Morasi IIb, Cut 3 (73-6805)
    m. Morasi IIb, Cut 4, 320–340 cm. (73-6806)
    n. Morasi IIb, Cut 4, 320–340 cm. (73-6807)
    o. Morasi II, Cut 3 (73-6808)

23. Miscellaneous pottery, clay objects, and stone
    a. Morasi I, Cut 4, 600–620 cm. (73-6809)
    b. Morasi I, Cut 4, 600–620 cm. (73-6810)
    c. Morasi I, Cut 4, 600–620 cm. (73-6811)
    d. Morasi I, Cut 4, 600–620 cm. (73-6812)
    e. Morasi IIc, Cut 4, 220–240 cm. (73-6813)
    f. Morasi IIc, Cut 4, 220–240 cm. (73-6814)
    g. Morasi IIb, Cut 4, 420–440 cm. (73-6815)
    h. Morasi IV, Cut 4, 40–60 cm. (73-6816)
    i. Early ceramic?, Cut 4, 0–20 cm. (73-6817)
    j. Early ceramic?, Cut 4, 0–20 cm. (73-6818)
    k. Surface (73-6819)
    l. Surface (73-6820)
    m. Morasi IIc, Cut 4, 140–160 cm. (73-6821)
    n. Morasi IIa, Cut 4, 540–560 cm. (73-6822)
    o. Morasi IIa, Cut 4, 540–560 cm. (73-6823)
    p. Morasi IV, Cut 4, 20–40 cm. (73-6824)
    q. Morasi IIa, Cut 4, 460–480 cm. (73-6825)
    r. Morasi II, Cut 3 (73-6826)

TEXT FIGURES

4. Alabaster rim fragment, Morasi I, Cut 4, 580–600 cm. (73-6827)
5. b. Utilized magnetite nodule, Morasi IIa, Cut 4, 440–460 cm. (73-6828)
8. Terra-cotta female figurines
    a. (Cast), Morasi IIa, Cut 4, 540–560 cm. (73-6823)
    b. Morasi IV, Cut 4, 20–40 cm. (73-6824)
9. a. Hollow copper drinking tube, Morasi IIa, Cut 4, 480–500 cm. (73-6829)
10. Stone and metal seals
    a. Morasi IIa, Cut 4 (73-6831)
    b. Morasi IIc, Cut 4 (73-6832)
    c. Morasi IV, Cut 4, 80–100 cm. (73-6833)
11. Beads and a drinking tube
    a. Morasi IIc, Cut 4, 120–140 cm. (73-6834)
    b. Morasi IIb, Cut 4, 320–340 cm. (73-6835)
    c. Morasi IIa, Cut 4, 480–500 cm. (73-6836)
    d. Morasi IIc, Cut 4, 240–260 cm. (73-6837)
12. Stone hoes
    a. Morasi IIa, Cut 4, 420–440 cm. (73-6838)
    b. Morasi IIb, Cut 4, 320–340 cm. (73-6839)
13. Fragment of an alabaster cup, Morasi IIa, Cut 4, 420–440 cm. (73-6825)
16. Leg of terra-cotta animal figurine, Morasi IIb, Cut 4, 420–440 cm. (73-6846)
17. Stone and bone artifacts, Morasi IIb, Cut 4
    a. Broken celt, 320–340 cm. (73-6840)
    b. Bone pendant, 293 cm. (73-6841)
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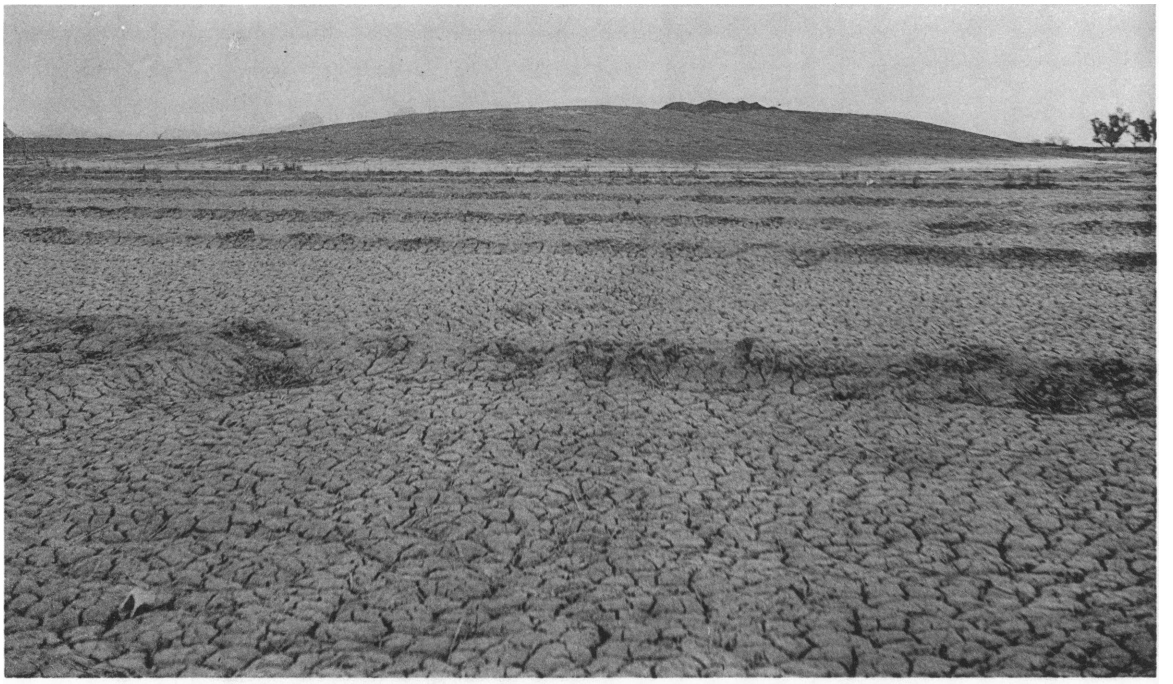
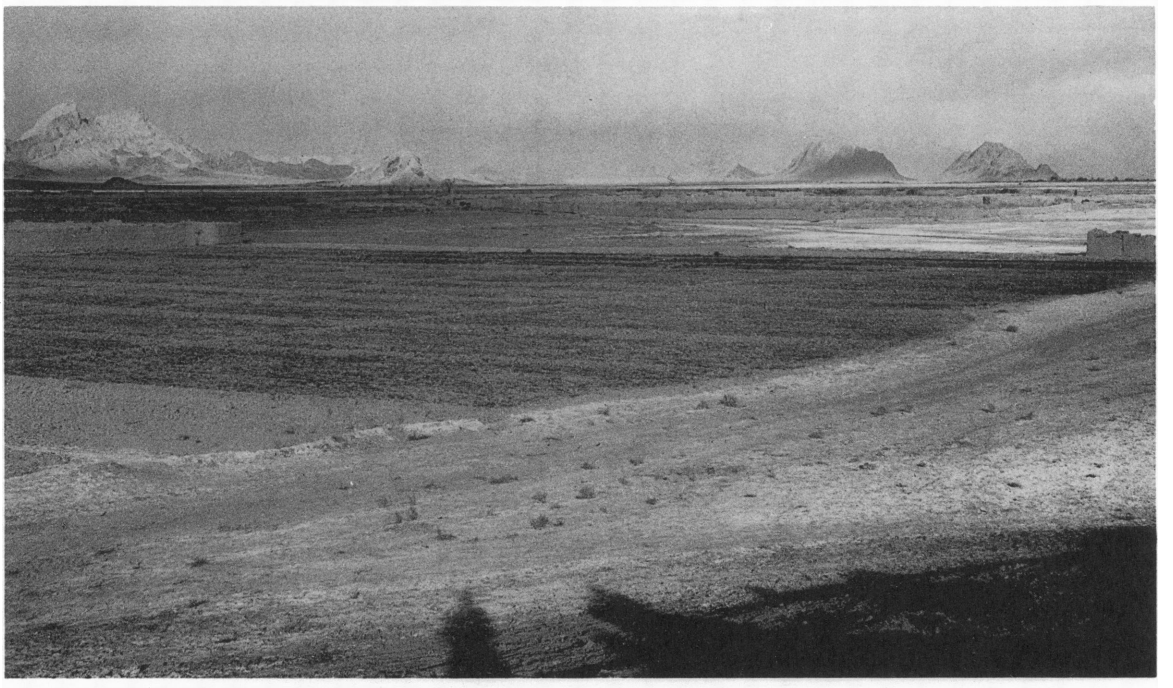
21. Terra-cotta objects, Morasi IIc, Cut 4
    a. Leg from human figurine, 100–120 cm. (73-6843)
    b. Bird figurine (cast), 180–200 cm. (73-6844)
    c. Sling missile (cast), 140–160 cm. (73-6845)

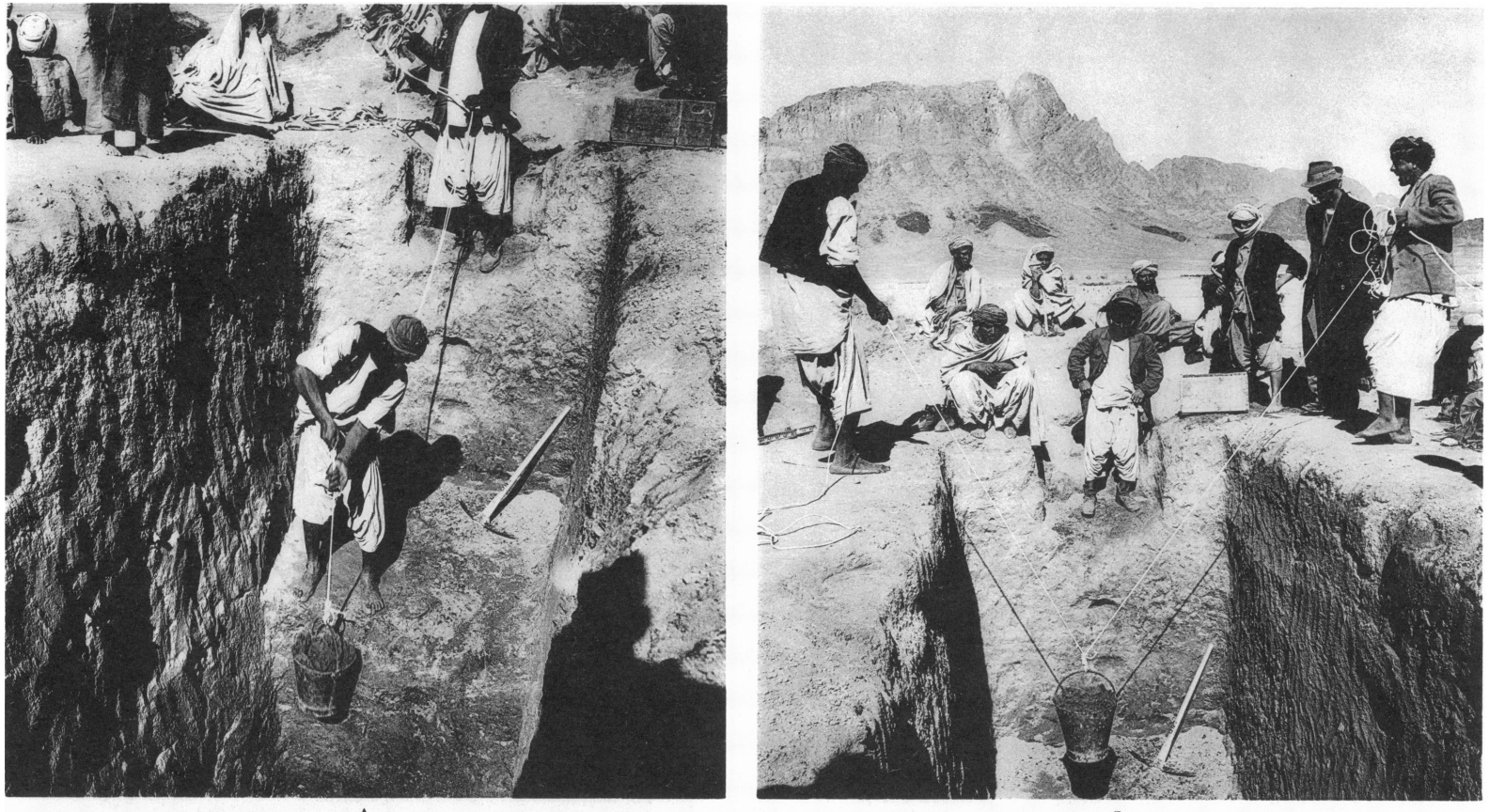


A



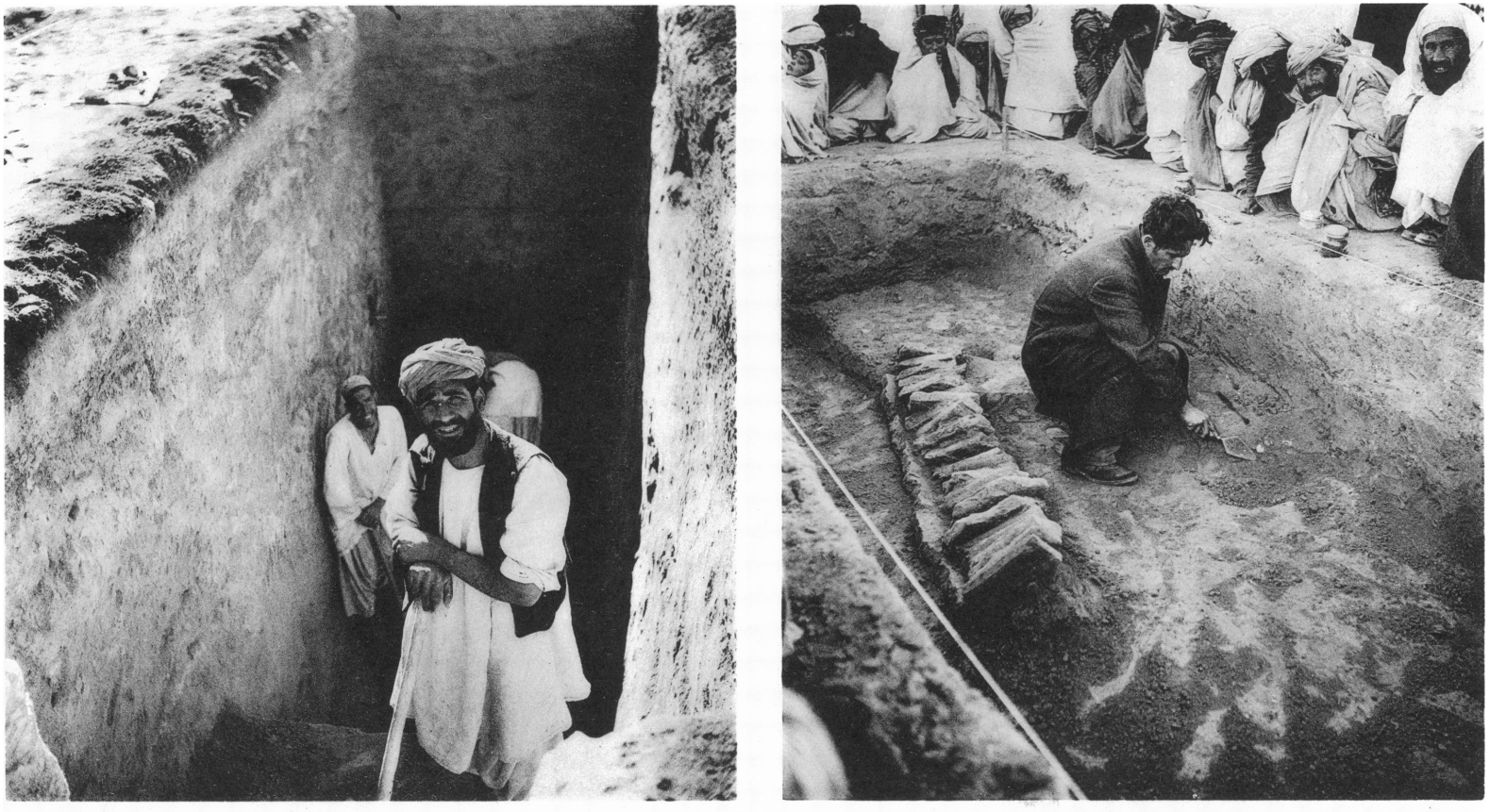
B

Deh Morasi Ghundai. a. View from the south. b. View toward Arghandab River



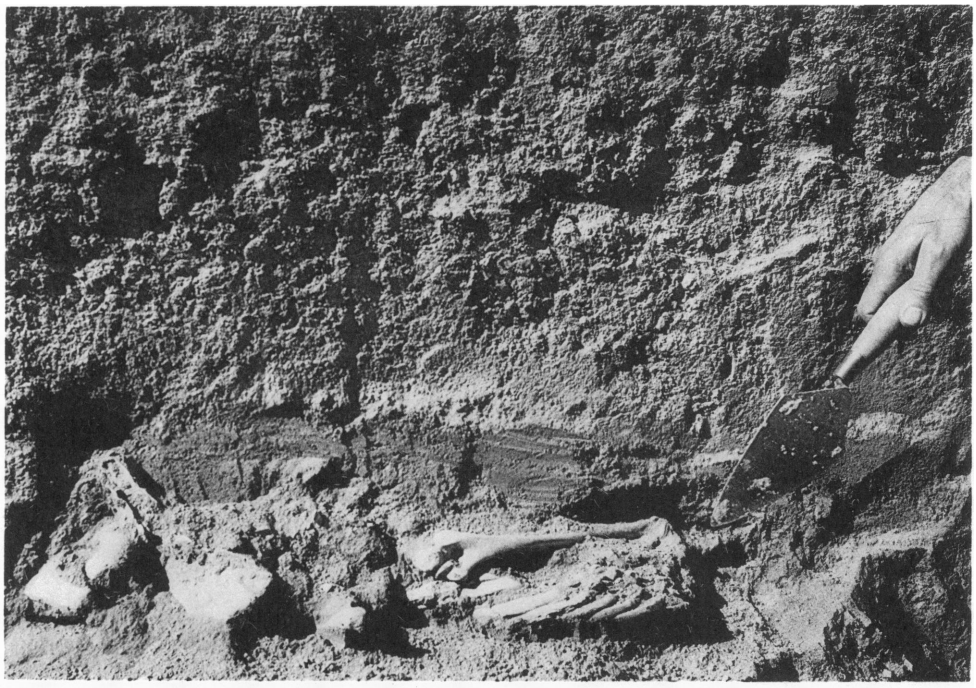
A B

Excavation techniques, Cut 4. a. Earth being lifted in bucket from step at cut at 2 meters. b. Rope and bucket used to haul earth to surface after a depth of 5 meters had been reached

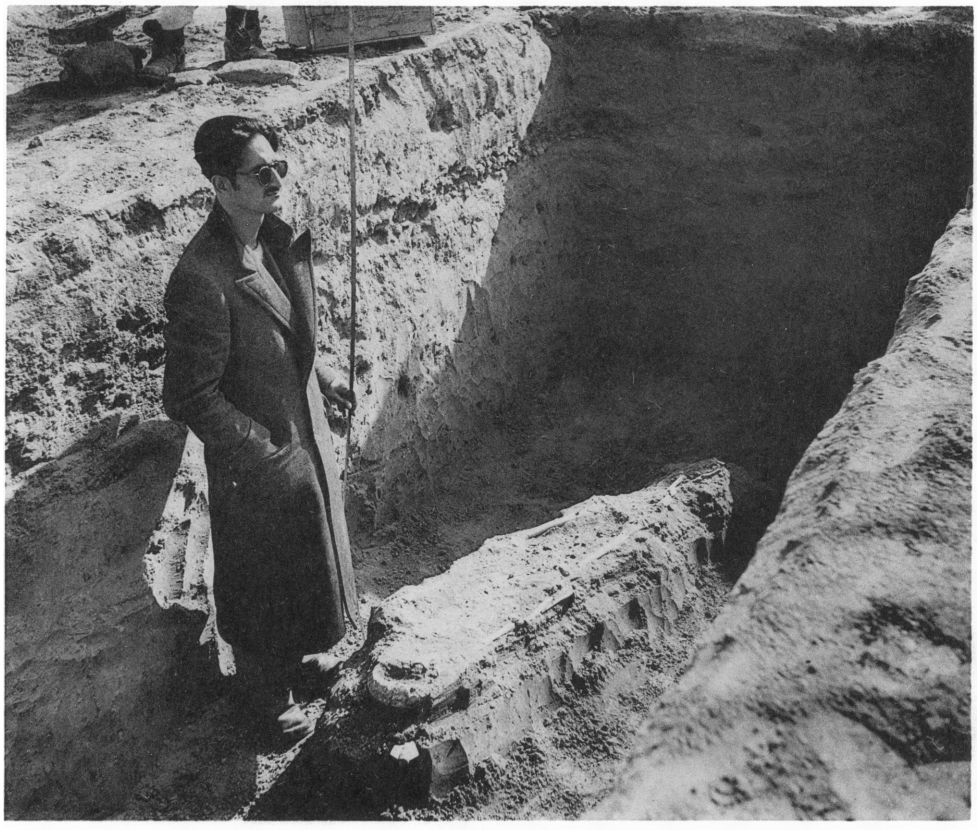


A B

Excavation of Cut 4, and Pathan physical types. a. Cut 4, showing the excavation of two steps. b. Brick-lined grave, Morasi III, Skeleton 3; excavation of Skeleton 1 (Morasi III) in side of trench. The stake in background marks Datum Point A



A



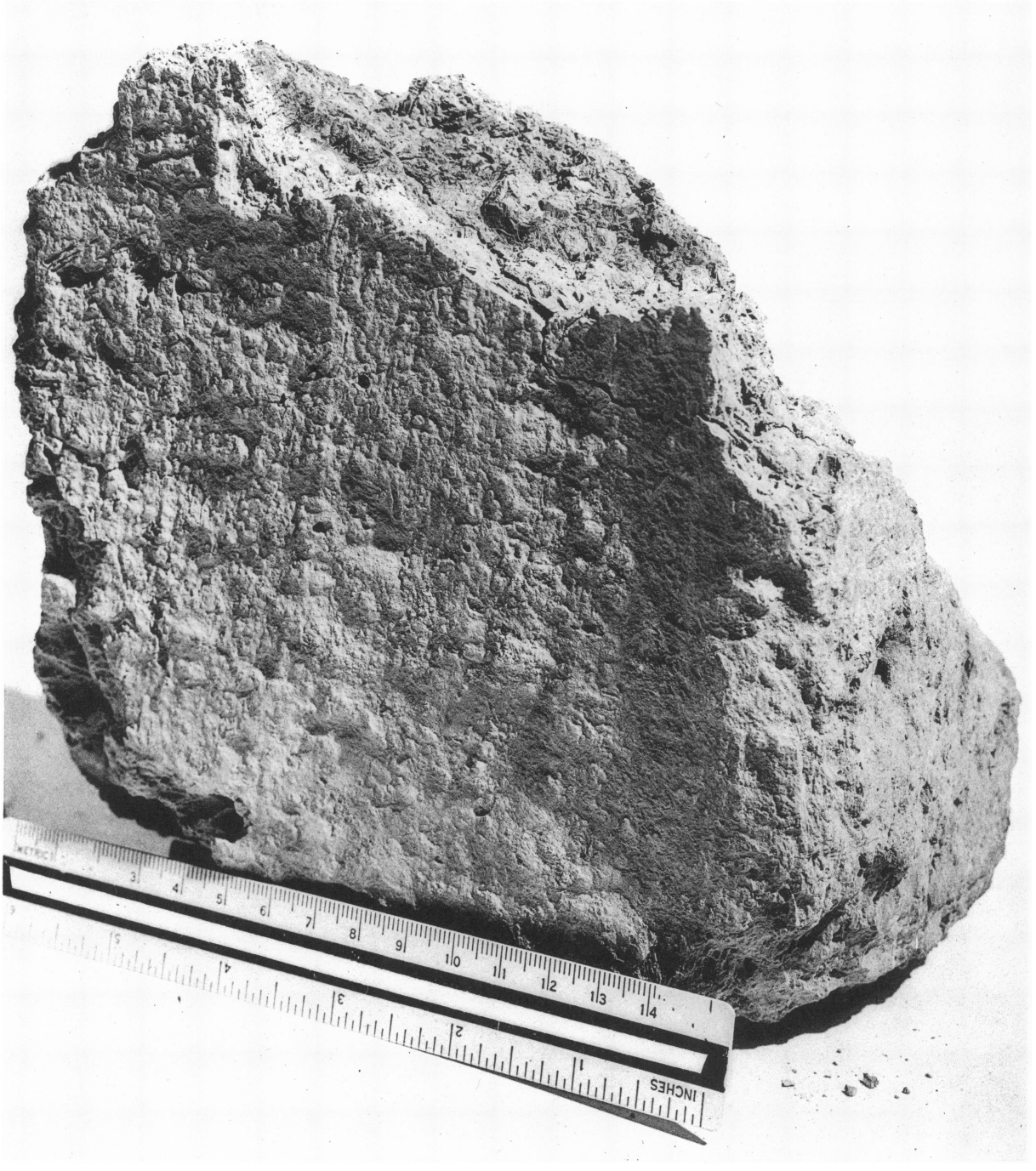
B

Excavation of Cut 4, Morasi III. a. Skeleton 1, a child (note unbroken strata above the skeleton). b. Skeleton 3 in brick-lined grave

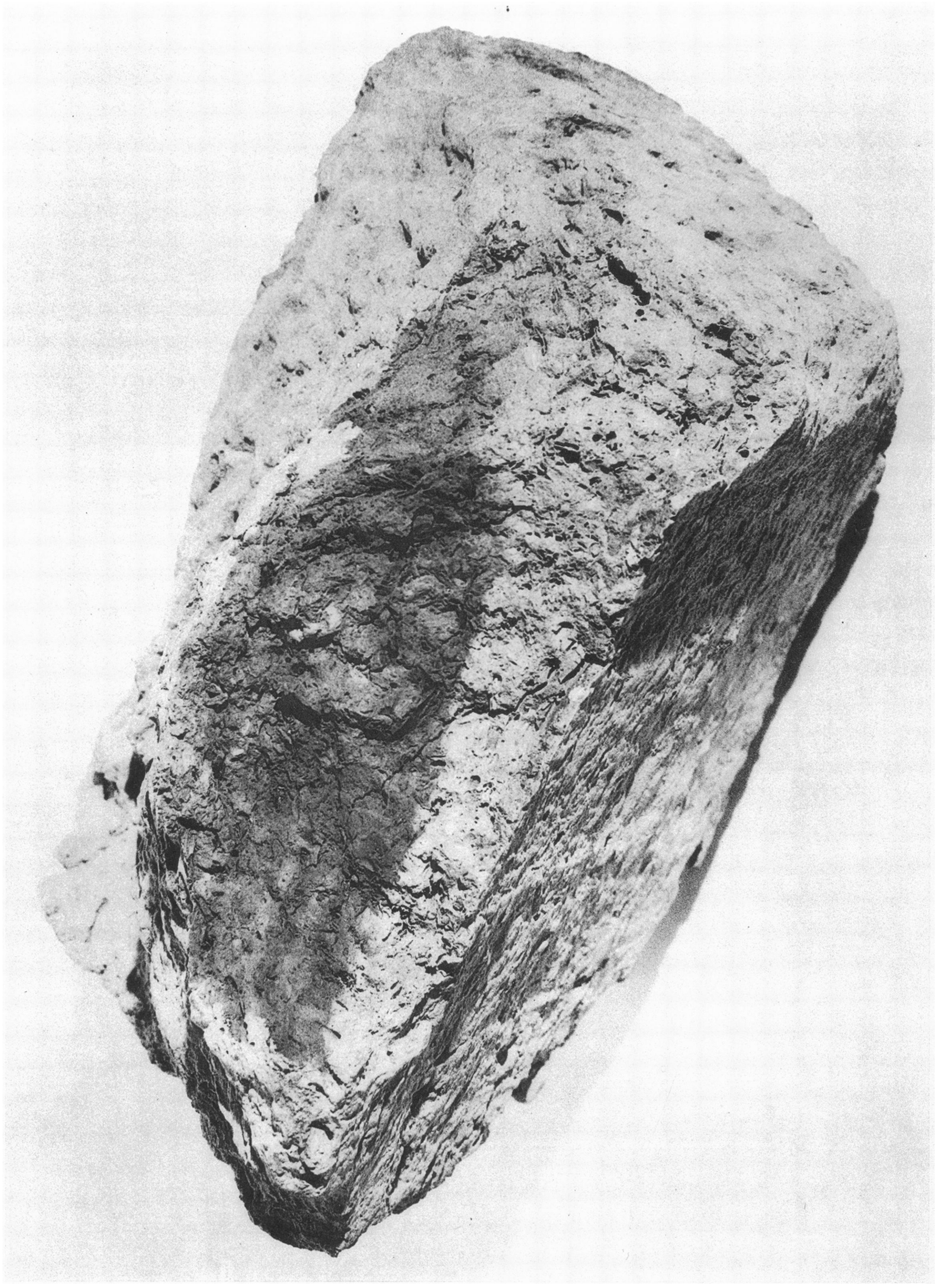
A

B

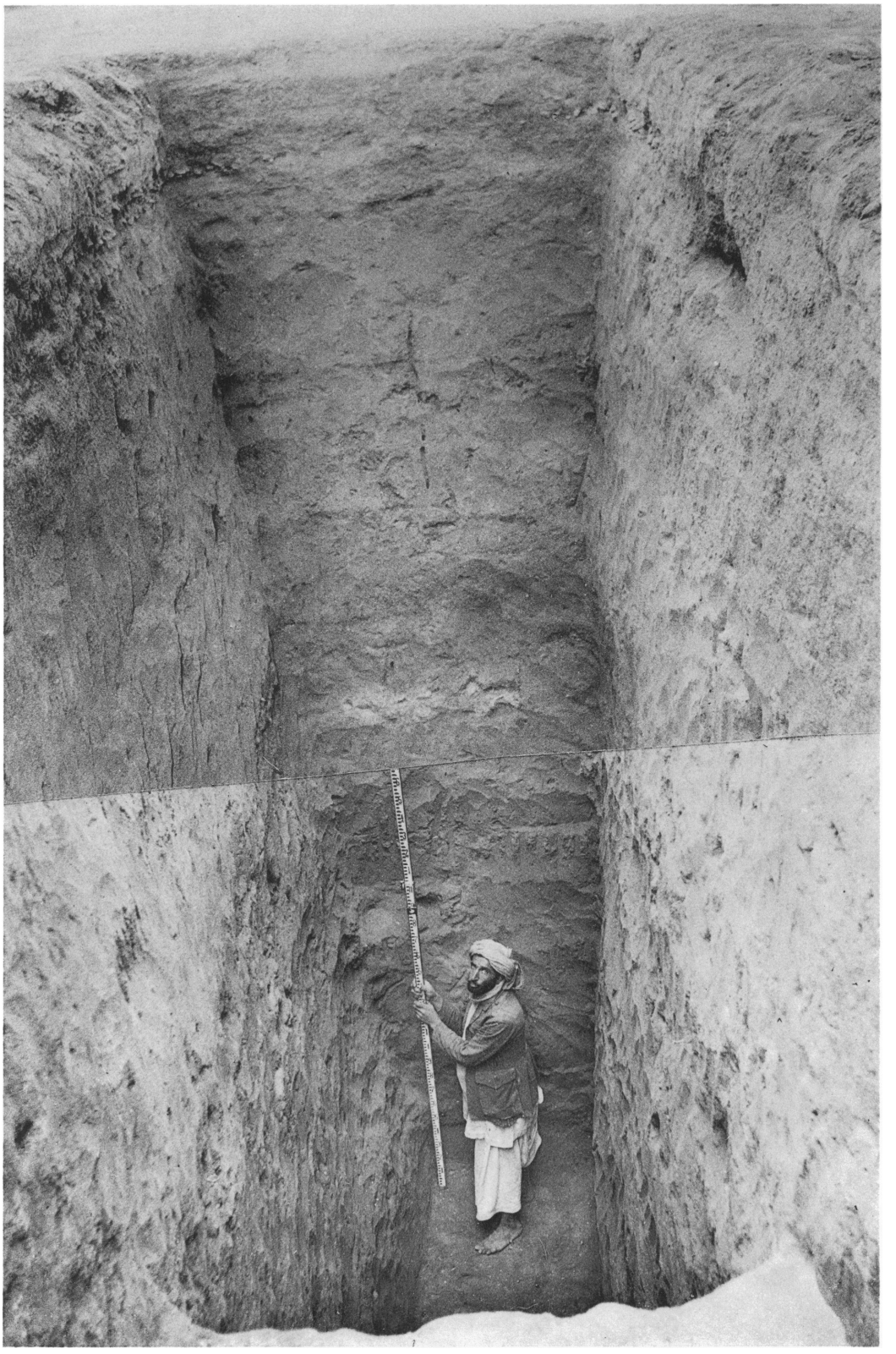
Excavation of Cut 4. a. Oven found at 344 cm., Morasi IIb. b. Shrine complex, Morasi IIa. Note the goat scapula, goblet, and brick; the trowel points to position of goat horns. See also Pls. 18 and 19



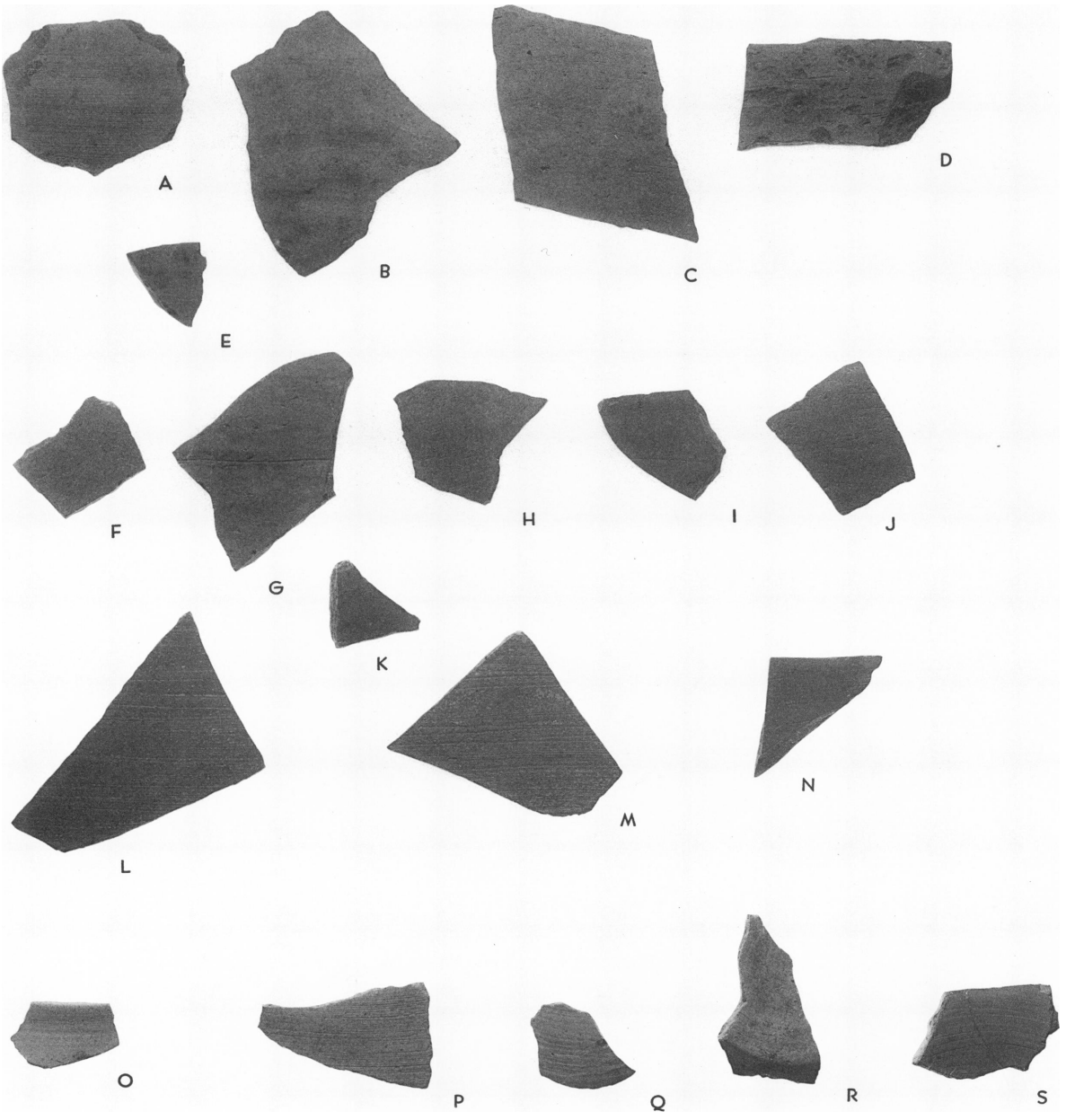
Top view of brick from shrine complex, Cut 4, Morasi IIa



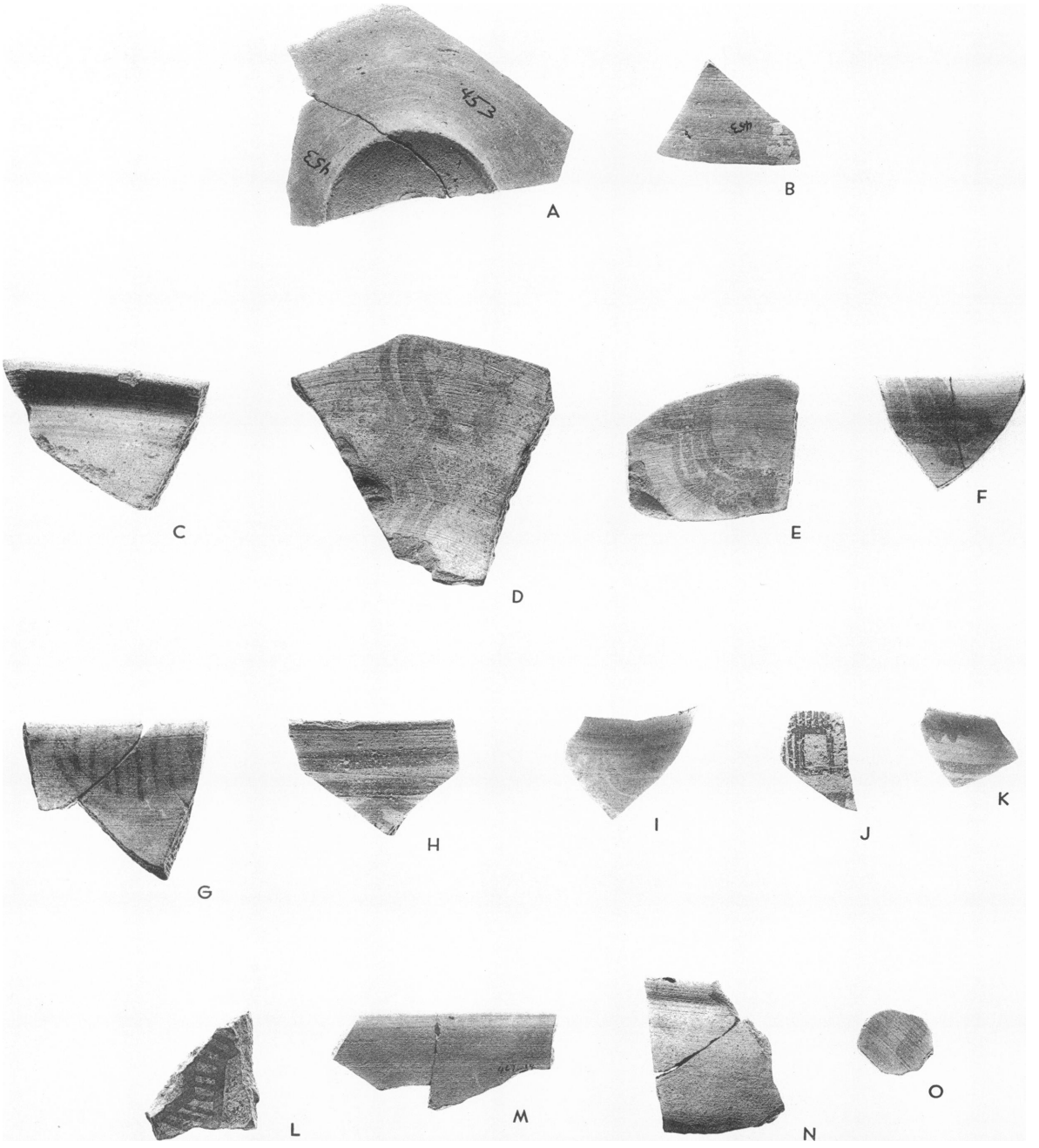
Cross-section of brick from shrine complex, showing portions of organic material and fracture line, Cut 4, Morasi IIa



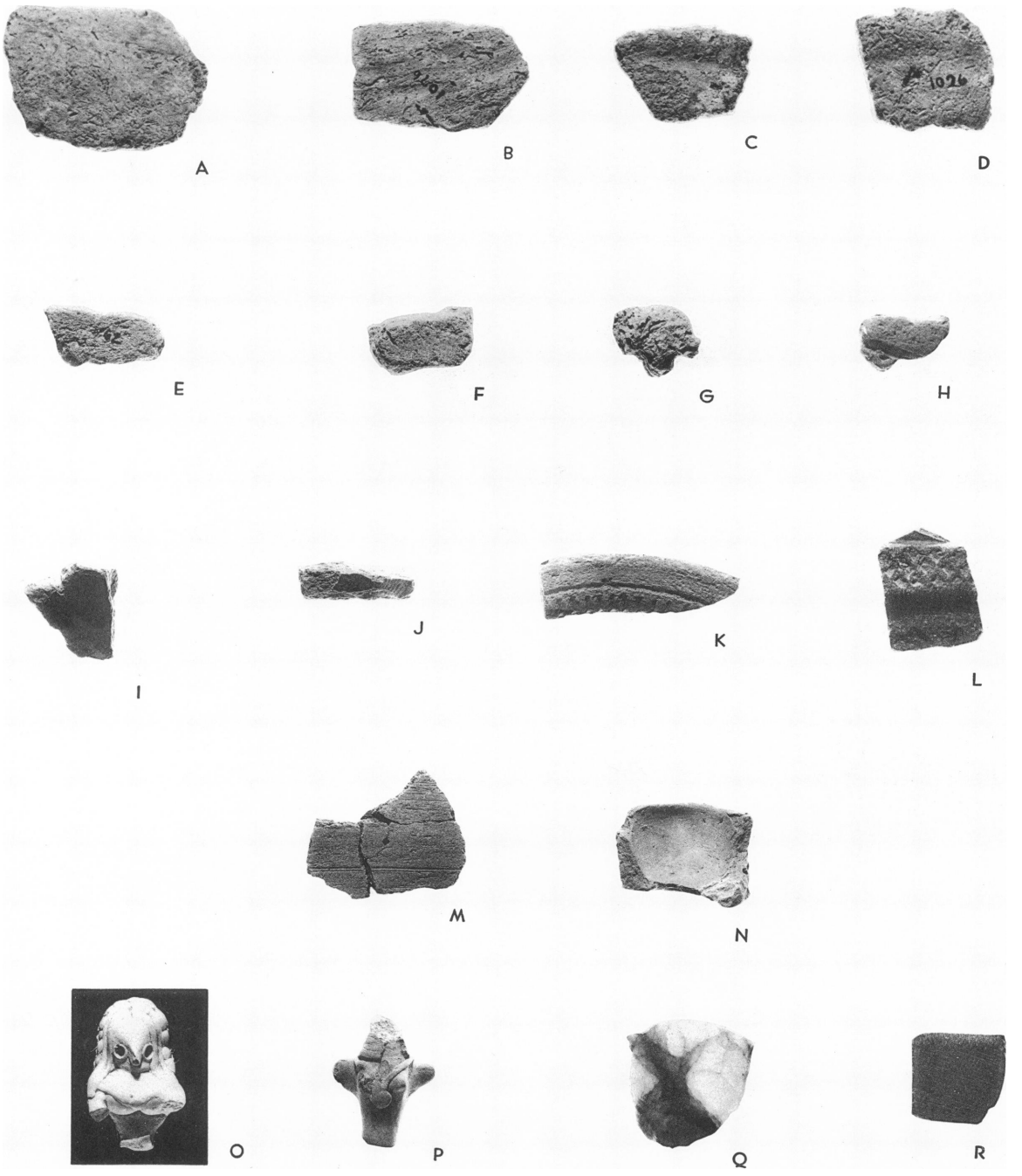
Stratigraphic section in Cut 4. The section is somewhat distorted because it is based on composite photographs taken from the edge of the trench



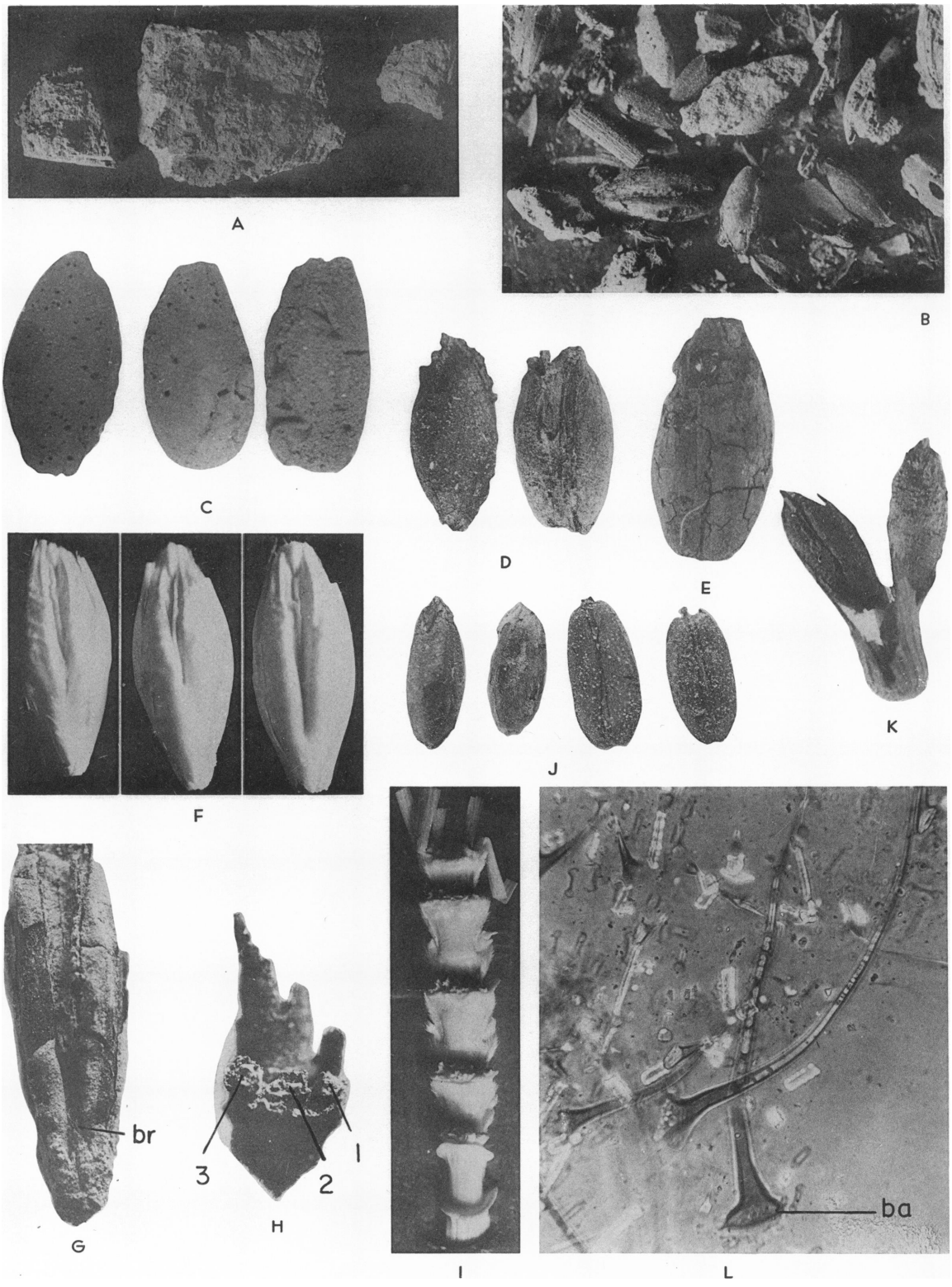
Undecorated wares. a–e. Panjwai Cream Surface. f–k. Maiwand Red Surface. l–n. Karim Cream Surface. o–q. Badwan Buff Surface, Variant 1. r–s. Badwan Buff Surface, Variant 2



Decorated wares. a–b. Pushmul Red Slipped. c. Morasi Black-on-Buff Surface. d–g. Nurzai Black-on-Red Surface, inside. h–j. Ware of "Quetta Type," Black-on-Buff Surface, outside. k. Nurzai Black-on-Red Surface, outside. l. Morasi Black-on-Buff Surface, inside. m–n. Popolzai Painted Rim. o. Disc, Nurzai Black-on-Red, inside



Miscellaneous pottery, clay objects, and stone. a–d. Said Qala Coarse ware. e–h. Kandahar Coarse ware. i. Green glaze. j. Blue glaze. k–l. Rouletted ware. m. Maiwand Red Surface, over-fired. n. Unfired hand-made cup. o. Cast of terra-cotta figure. p. Terra-cotta figurine. q. Alabaster cup. r. Slate sharpener


A
B
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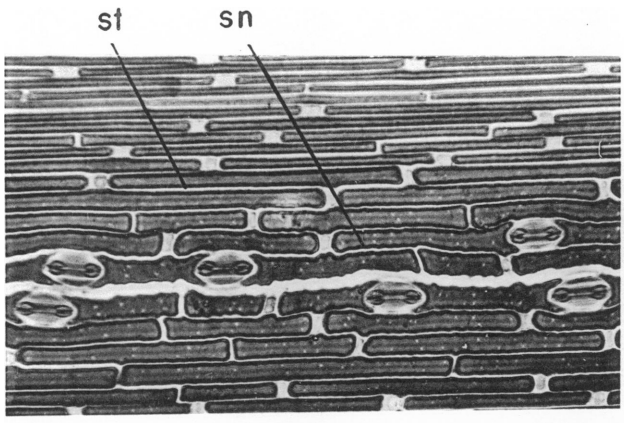
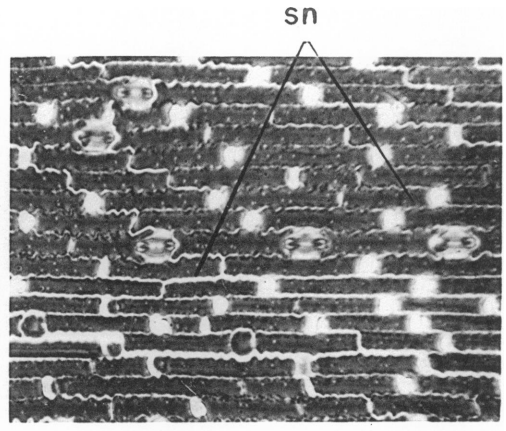
a. Pieces of mud brick. b. Plant parts and casts from mud bricks. c. Grain casts from Sample A. d. Grain from Sample A. e. Large grain from Sample A. f. Recent grains of *Hordeum vulgare* var. *afghana*. g. Single grain from Sample A (note bristle, br, in the bottom end of the groove). h. Floret-axis from Sample A, showing persistent seat of caryopses (1, 2, 3). i. Floret-axis of *Hordeum vulgare* var. *afghana*, showing seat of caryopses, after the forcing out of the grains. j. Grains from Sample B. k. Fruit from Sample B (lemma and palea tightly enclosing grains). l. Hairs on stem from Sample B (note the swollen base of hairs, ba)

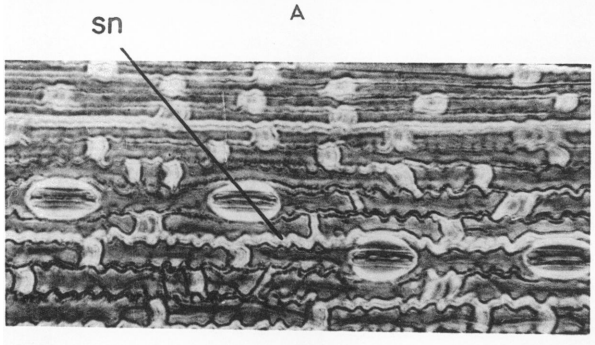
Scales: a, × ½; b, × 3; c–e, j–k, × 6; f, × 5; g, × 9; h, × 11.5; i, × 3.5; l, × 140



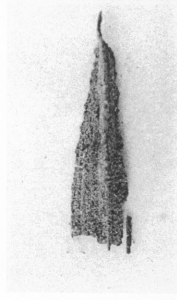
A



B

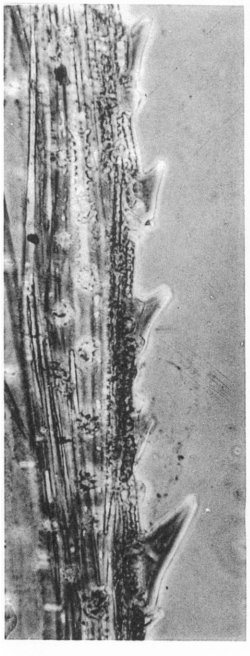


C

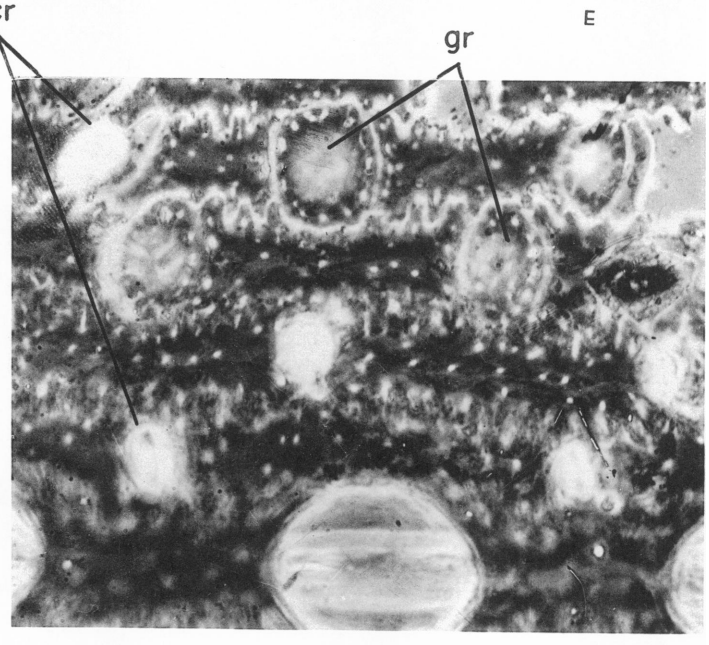


D

E



F



G

a. Peel of epidermal cells of *Hordeum vulgare* (note the sinuous, sn, and straight, st, walls of long cells; compare size of stomata in b). b. Peel of epidermal cells of *Aegilops tauschii* (note that all the long cells have sinuous walls, sn). c. Peel of epidermal cells of stem of Sample A (note the shape of the stomata and the sinuous wall, sn, of long cells near the stomata). d. Part of an awn recovered from a grain of Sample A. e. Spikelet from Sample B (note brush-like hair). f. Prickles on stem of Sample B (note angular shape). g. Peel from stem of Sample B (note that short cells in pairs have crystals, cr, and empty cork cell; single short cells have granules, gr)

Scales: a–b, × 90; c, f, × 140; d–e, × 6; g, × 510

ANTHROPOLOGICAL PAPERS
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Volume 50

PART 1. Hopewell Culture Burial Mounds near Helena, Arkansas. By James A. Ford. Pages 1–56, plates 1–12, 38 text figures, 5 tables. 1963. Price, $1.75.

PART 2. Deh Morasi Ghundai: A Chalcolithic Site in South-Central Afghanistan. By Louis Dupree. Pages 57–136, plates 13–25, 30 text figures, 199 designs, 12 tables. 1963. Price, $2.50.